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ABSTRACT

The papers contained in this proceedings from the 1995 Society for Literature and Science Conference are organized into sections with the following themes: (1) Metaphor and Science; (2) The Technological Invasion of the Living Space; (3) Autobiographies and Biographies of Scientists; (4) Science and 19th Century Literature; (5) Visions of the Feminine Body; (6) The Human Genome Project; (7) Reproduction and Gender; (8) Science and the Romantic Sensorium; (9) The New Pedagogy; (10) Chaos and Complexity; (11) Theory; (12) The Cultures of Thermodynamics; (13) AIDS in Nonfiction and Film; (14) Science and Faith; (15) Responses to Darwin; (16) Medicine and Illness; (17) The Art of Reflective Science; (18) Internet Communities; (19) The Future of Literature and Science; (20) Narratives of Non Human Others; (21) Science and Society; (22) Knowledge and Power; (23) Popularizing Science; (24) Artificial Intelligence and Cybernetics; (25) The Old New Physics; (26) The Role of Anecdote in Science; and (27) Hypertext. (DDR)

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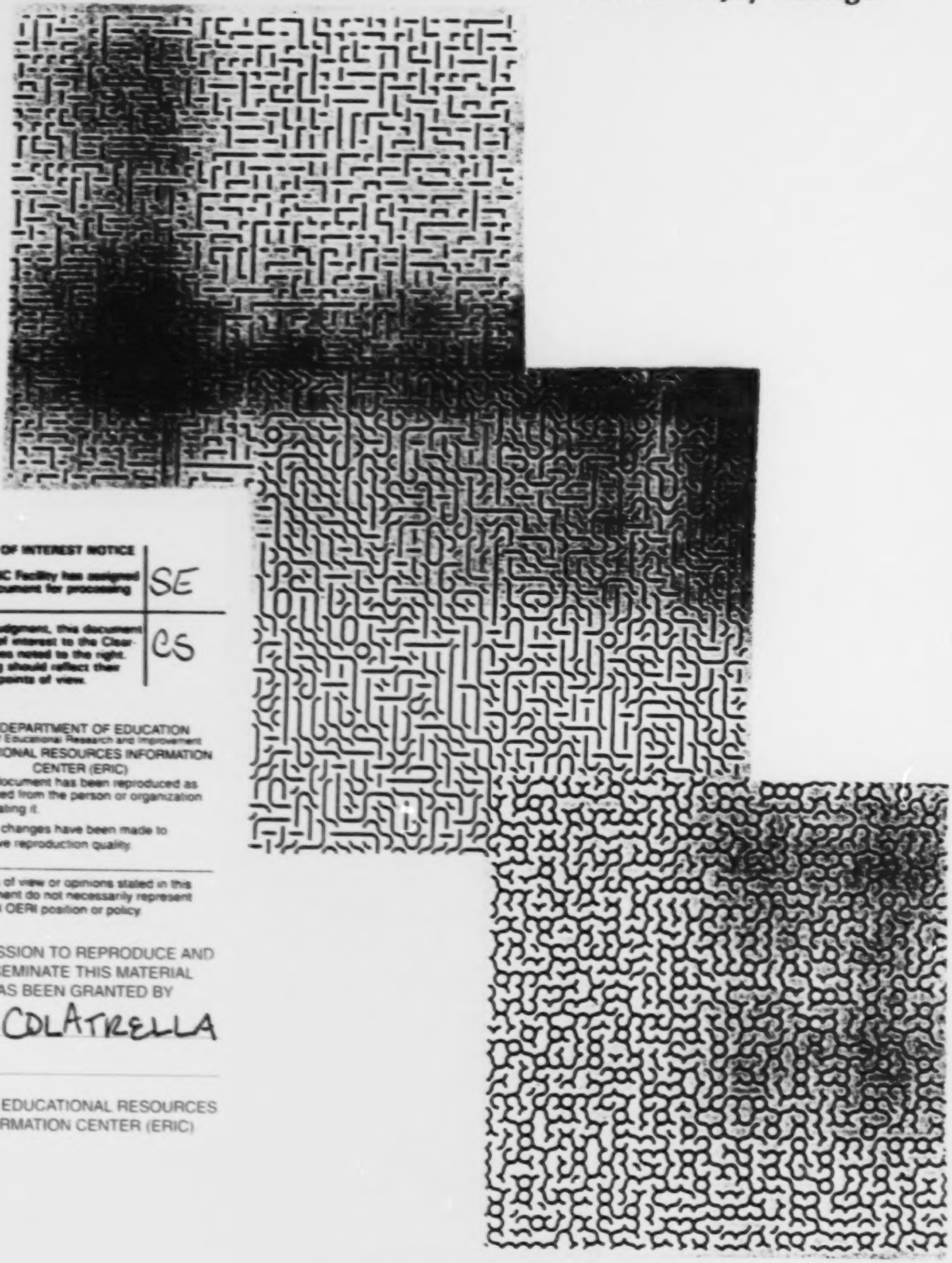
ED 406 220

Society for Literature & Science

1995 CONFERENCE, LOS ANGELES AND UCLA

EDITOR: Jay Labinger



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November 2-5, 1995

BEST COPY AVAILABLE

WELCOME TO THE 1995 MEETING OF THE SOCIETY FOR LITERATURE AND SCIENCE!

Contents of this book:

1. Local Arrangements

2. Schedule of the Meeting

3. Abstracts

4. Index of Participants

Please note: Abstracts are grouped by sessions and presented in chronological order. (A small number were not received in time for inclusion.) The abstracts for all the sessions at a given time follow a colored page that reprints the schedule for that time period. The last colored page lists special events, and precedes an index that gives an alphabetical listing of participants with the time(s) of their presentation and/or role as panelist or session chair.

LOCAL ARRANGEMENTS

Meeting Rooms

Most of the sessions and other activities will take place in the Radisson Bel-Air Summit Hotel. The rooms are on the ground floor (except for the Metro Room which is on the 2nd floor); the layout is shown below. Some sessions will be held in the Canyon and Westwood Rooms in the neighboring Holiday Inn Brentwood; those are indicated by (HI) in the schedule.

The Plenary Session on Friday evening will be held at UCLA, in the California Room of the Faculty Club. Bus transportation will be provided from the Radisson, starting at 7:00 pm. The session will be followed by a Reception. Return transportation to the hotel will be available starting around 9:30 pm.

Registration and General Information

The Registration Desk will be in the foyer outside the Summit Room at the Radisson. The desk will be staffed throughout the conference for assistance with problems and answers to questions. Messages will be posted in this area.

Cover design adapted from Andy Kopra's "The Ornament of Grammar," used with permission. The designs are generated by a computer program and bound in a series of ten books with black generic covers. They illustrate, Kopra says, the rationalization of design in a form that comprises an apparent "encyclopedia of the arbitrary," at once celebrating the operation of logical algorithms and bringing them into question.

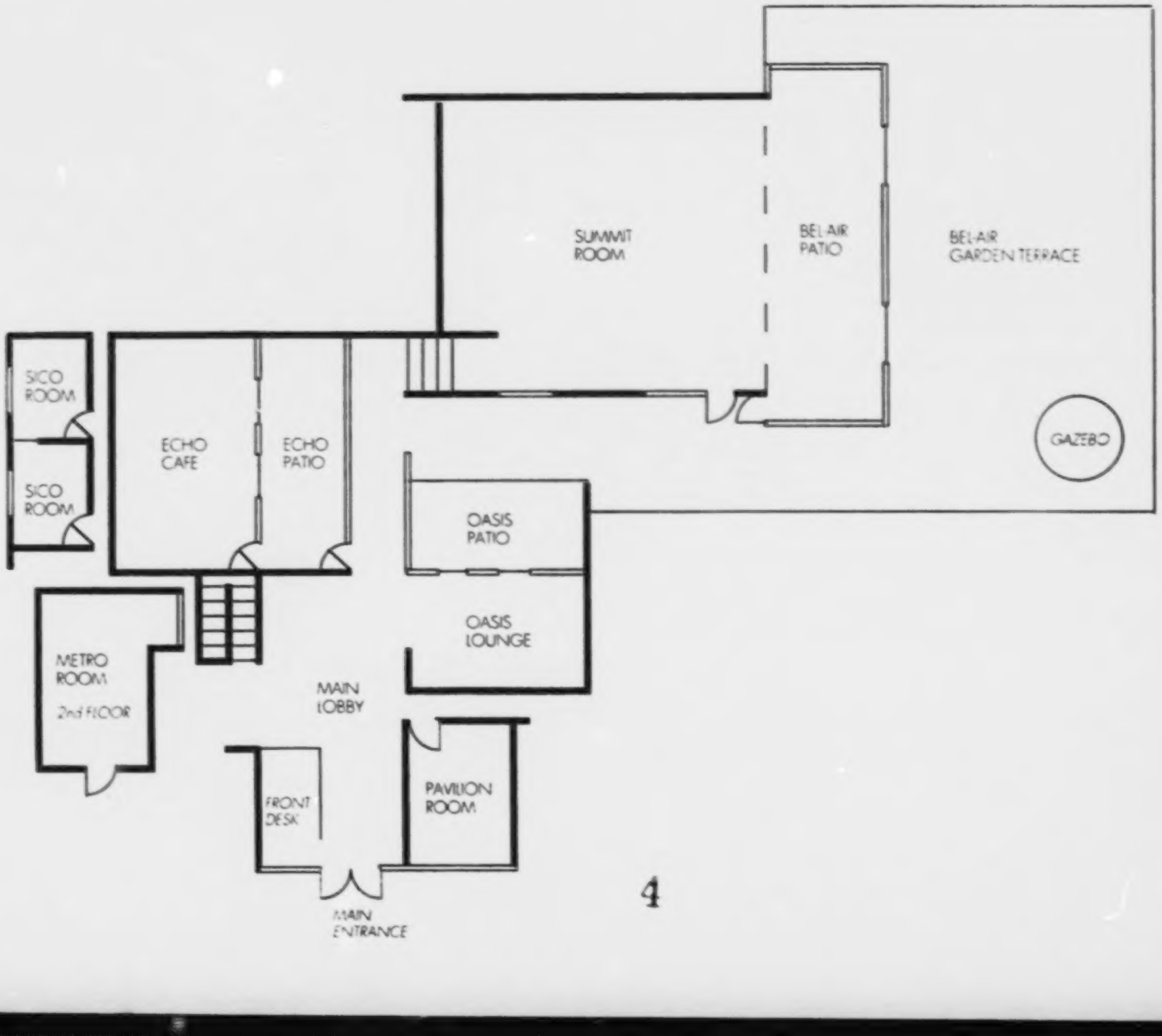
Audio-Visual equipment has been provided as requested in advance. If you have any questions, problems or changes, please consult the Registration staff as far in advance as possible.

An exhibit of books for sale will be on display in the Oasis Patio (Radisson), beginning Friday morning.

Dining and Transportation

Information about restaurants and other attractions will be available at the Registration Desk. The Radisson provides shuttle bus service to/from Westwood Village; please check with the hotel for details.

The registration fee includes the Saturday lunch/business meeting. For convenience, the Radisson is offering a buffet lunch on Friday on the Bel-Air Terrace; tickets ($12) are available at the registration desk. (The receptions following the Plenary Session on Friday evening (at UCLA), and following the last session on Sunday morning, will be fairly substantial, possibly --depending on the person -- sufficient for a meal.)


SUMMIT ROOM
BEL-AIR PATIO
BEL-AIR GARDEN TERRACE
GAZEBO
SICO ROOM
SICO ROOM
ECHO CAFE
ECHO PATIO
OASIS PATIO
OASIS LOUNGE
METRO ROOM 2nd FLOOR
MAIN LOBBY
FRONT DESK
PAVILION ROOM
MAIN ENTRANCE

PROGRAM
1995 CONFERENCE OF THE SOCIETY FOR LITERATURE AND SCIENCE

Thursday, November 2, 4:00-8:00 PM

Registration (through Sunday) **Radisson Foyer**

Thursday, November 2, 6:00-7:00 PM

Plenary Session **Summit**

- Sharon Traweek: "Crafting Cultural Studies of Science"

Thursday, November 2, 7:00-8:30 PM

Reception **Bel-Air Terrace**

Friday, November 3, 8:30-10:00 AM

A. Metaphor and Science I **Westwood(HI)**
Anne Gatensby, chair

- Amir Alexander: "The Imperialist Space of Elizabethan Mathematics"
- Paul V. Anderson: "Thomas De Quincey, Immanuel Kant, and Lord Rosse's Telescope: Optics as Metaphor and Metaphor as Optics"
- Marianthe Karanikas: "On Metaphor and Measurement"
- Julie A. Reahard: "A Particularly Pleasing Model: Mathematics as Shaper of Scientific Metaphor"

B. The Technological Invasion of the Living Space **Summit**
Charles Bazerman, organizer and chair

- Charles Bazerman: "The Turned-On Home: Incandescent Lighting and Changing Domestic Imagery in the Early Edison Years"
- Laura Holliday Butcher: "Techno-Culture in the Kitchen"
- Patrick B. Sharp: "Post-Atomic Home/Lands: Representations of the Bomb in North American Minority Literatures"

C. Autobiographies and Biographies of Scientists **Canyon(HI)**
Carolyn A. Barros, organizer and chair

- Diana B. Altegoer: "The Scientist as Text: The Sense of Self in the Writings of Robert Boyle"
- Johanna M. Smith: "Discourses of Exploration and Colonization in Francis Galton's *Memories of My Life*"
- Carolyn A. Barros: "Chain Reactions: Science as Politics in the *Recollections* of Eugene P. Wigner"
- Livia Polanyi: "Constructing the Scientist as Figure: Constructing All Others as Ground"

D. Science and 19th Century Literature **Pavilion**
Lori Wagner, chair

- Lawrence Frank: "'Mr. Vestiges': *Bleak House* and a Crisis in Narrative"
- Donald M. Hassler: "Anthony Trollope and Philosophic Radicalism: A Case for Newness"
- Martin Kevorkian: "Nineteenth-Century Particle Metaphysics: Hawthorne's Puritan Lucretius"
- Goldie Morgentaler: "Preformation and Other Theories of Heredity in the Novels of Charles Dickens"

E. Visions of the Feminine Body **Bel-Air Patio**
Marcella Greening, chair

- Nancy Cervetti: "Rewriting the Rest Cure: Medical Discourse, The Female Body & Gilman's Response"
- Ellen Esrock: "Is the Mental Gaze of the Reader Male? Francis Galton vs. Luce Irigaray"
- Rebecca Merrens: "Bodies of Evidence: Theater, the Feminine, and the Production of Anatomical Knowledge in Jacobean Culture"
- Teresa Winterhalter: "*Le corps lesbien* and the Politics of Love under a Microscope"

F. The Human Genome Project I: Re-Thinking the Genetic Paradigm **Metro**
Alan Wasserstein, organizer

- Alan Wasserstein: "Molecular Biology: A Post-Modern Reading"
- Richard Strohman: "Limits of a Genetic Paradigm in Biology and Medicine"
- John Wells: "Non-Darwinian Evolutionary Biology"

Friday, November 3, 10:00-10:30 AM

Refreshments **Bel-Air Terrace**

Friday, November 3, 10:30-12:00 Noon

A. Reproduction and Gender **Bel-Air Patio**
Dawn Dietrich, chair

- Kristina Busse: "Mothering Medusa: Desiring the Other in Octavia Butler's *Xenogenesis*"
- Leonard R. Koos: "For Medical Use Only? The Rhetoric of Abortion in Turn-of-the-Century France"
- Lili Porten: "A Dream of Parthenogenesis, An Equation of Two Unknowns: The Metaphor of Artistic Parenthood in the Nineteenth Century"
- Susan Squier: "Reproductive Technologies and the New Fetal/Maternal Relation"

B. Science and the Romantic Sensorium **Canyon(HI)**
Carl Stahmer, organizer and chair

- Katharine M. Hawks: "The Separation of the Senses: Visual Technologies and Romantic Poetry"
- Carl Stahmer: "Scientific Humanism: Cognitive Modeling and the Romantic Conception of Human Subjectivity"
- Vince Willoughby: "Romantic Writers and Poetic Automation"

C. Charles Lyell **Pavilion**
Lee Sterrenburg, organizer and chair

- Elizabeth Green: "Visualizing the Interior in Pre-Darwinian Narrative"
- Anka Ryall: "Agents of Change: Charles Lyell, Harriet Martineau and the Niagara Falls"
- Lee Sterrenburg: "Processing Information: Darwin's Galápagos Archipelago Revisited"

D. Diagrams and Discourse: Reading Maps of Knowledge **Summit**
Paul A. Harris, organizer; Stephen J. Weininger, chair

- Paul A. Harris: "Diagrams, Houses and Cities: Between Arche-Text and Architecture"
- Sydney Levy: "Pictorial Knowledge"
- Philip Kuberski: "Hieroglyphics and Cinematics: Before the Beginning and After the End of the Letter"
- Brian Rotman: "Grams, Graphics and Other Thinking Machines"

E. The New Pedagogy **Metro**
Deborah Heath, chair

- Robert Chianese: "Ecological Seeing, the Interdisciplinary Field Trip, and the Engaged Self"
- Laurel Brodsley: "Student Poetry-Video as Tool for Social and Scientific Consciousness"
- Michelle Kendrick: "Playing with Fire!!: Hypertext and the Harlem Renaissance"
- Seymour W. Pustilnik and Phyllis L. Pustilnik: "The Mark Twain Utopia of Non-Euclidean Twin Parallel Worlds"

F. Chaos and Complexity I **Westwood(HI)**
Emily Zants, organizer and chair

- Randy Fertel: "Strange Relation: The Rhetoric of Literary Improvisation/The Rhetoric of Chaos Science"
- Julie C. Hayes: "Chaotic Enlightenment: Automata, Weather Systems, and the Europe-Machine in L. Norfolk's *Lemprière's Dictionary*"
- James Leigh: "Four Figures for the/a Future Reading of *Life a User's Manual*"
- Emily Zants: "Evolution of the French Novel towards Cinema: Riding on the Edge of Chaos"

Friday, November 3, 12:00-1:00 PM

Lunch

Friday, November 3, 1:00-2:30 PM

A. Theory **Canyon(HI)**
Lucia Palmer, chair

- W. John Coletta: "The Food Chain of Signification: Postmodern Evolutionary Ecology and the Question of Interdisciplinarity"
- Helen Denham: "The Frankfurt School and a Dialectics of Nature"
- Samantha Fenno: "Changing the Object: (Post)Structuralism, Scientism and Disciplinary Validation"
- Michael Witmore: "The Trope of Accidental Discovery in Francis Bacon's *Great Instauration and New Organon*"

B. The Cultures of Thermodynamics

Summit

Bruce Clarke, organizer and chair

- Bruce Clarke: "The Selected Poetic Works of James Clerk Maxwell"
- John G. Hatch: "Images of the Evolution of the Universe: Thermodynamics in the Art of Kazimir Malevich"
- Stephen J. Weininger: "Sooner Silence Than Confusion: Entropy and Early 20th-Century Chemistry"
- Martin Rosenberg: "Complicity and the Counter-Culture of Thermodynamics: Oswald Spengler and Thomas Pynchon"

C. AIDS in Nonfiction and Film

Metro

Janet Bell Garber, chair

- Carol Colatrella: "The Other as Savior: Race and AIDS in *Lorenzo's Oil*"
- James W. Jones: "Brother, Lover, Patient, Friend: Gay Men with AIDS in Non-Fiction by Care Givers"
- Deborah Lovely: "The Novel is the Most Subversive Form: Leprosy as AIDS in *Time to Kill*"
- Carol Reeves: "French vs. American: Contrastive Rhetorics of Science in the AIDS Virus Hunt"

D. Singing in the Brain and the Body Electric

Bel-Air Patio

Paul Harris, organizer and chair

- Richard Doyle: "Cryonics and the Promised Body"
- Alan E. Rapp: "Forgoing Friction: Digital Words and the New Entropy"
- Vivian Sobchak: "Beating the Meat: Baudrillard's Body"

E. Science & Faith

Pavilion

Susan A. Hagedorn, chair

- Thomas L. Cooksey: "*A Voyage to the World of Cartesius*: Descartes, Science, and Censorship"
- Stuart Peterfreund: "Bacon's Puritan Epistemology, the Crisis of Representation, and the Way of Natural Theology
- Dale J. Pratt: "Science, Faith and Reference: Cajal's *Cuentos de vacaciones* and Palacio Valdés's *La fe*"
- Dennis Costa: "Providence, Newtonism and Appropriate Technology in Christopher Smart"

Friday, November 3, 2:45-4:15 PM

A. Science Fiction and Ethical Speculation

Westwood(HI)

David E. Armstrong, organizer and chair

- Marilyn Gottschall: "Ethics without Gender"
- David E. Armstrong: "Brave New Waves: The Ethical Rhetoric of Constructivist Postmodernism and Science Fiction"
- Aditi Gowri: "'Not Doing' as Ethical Social Policy: Null-A and Alexander Technique in Science Fiction"
- Sara L. Miskevich: "Where None Have Gone Before: Ethics and Science Fiction in Popular Culture"

B. Visual Images I: Photography and Painting **Metro**
Martin Rosenberg, chair

- Anne Frances Collins: "Digital Photography and Visual Paradigms: A New Look"
- Hugh Culik: "A Womb of His Own: Diego Rivera, Frida Kahlo, and the Collaborative Body Shop"
- Stephen Hartnett: "'The Truth Itself': How Whitman, Hawthorne and Agassiz Employed the Daguerrotype as Scientific Proof"
- Karl F. Volkmar: "Crystals, Character, and Culture: Essentialist Structures as Informational Structures and the Representation of Gender and Class in the Impressionist Paintings of Camille Pissaro"

C. Responses to Darwin **Canyon(HI)**
Lawrence Frank, chair

- Greg Foster: "The Ape-Man in the Mirror: T. S. Eliot's Sweeney Poems as a Satire of Human Evolution"
- Cyndy Hendershot: "Masculinity and the Darwinian Feminine"
- Alan Rauch: "'See How the Fates, Their Gifts Allot': The Emergence of Darwinian Sensibility in Gilbert and Sullivan"
- Gary Willingham-McLain: "Darwinian Space"

D. Medicine and Illness I: The Body and the Mind **Pavilion**
Susan Connell, chair

- Kerry M. Brooks: "Free to Be You and Me?: The Prozac Debate"
- Marilyn Chandler McEntyre: "What's Borne in the Body: William, Henry and Alice James and the Mystery of Psychosomatic Illness"
- Christine Skolnik: "Gender, Neuropsychology, and Aesthetics"

E. Technology, Pathology and the Cultural Politics of the Emotions **Bel-Air Patio**
Kathleen Woodward, organizer and chair

- Kathleen Woodward: "Prosthetic Emotions"
- David Crane: "Plotting the Paranoid Text: Conspiracy and Communication in *Sorry, Wrong Number*"
- Amelie Hastie: "Revolution on the Border Between Emotion and Cognition: Freud's 'Rat Man' and *The X-Files*"
- Angela Wall: "'First, You Cry': Coming Out Stories and the Emotional Politics of Breast Cancer"

F. The Art of Reflective Science **Summit**
Sidney Perkowitz & Jeffrey Sturges, organizers and co-chairs

- Peter Brown (guest speaker): "Telling it Like it Is: Perspectives on Writing about Science for Non-Scientists"
- K. C. Cole: "Science Writing and Complementarity"
- Jeffrey Sturges: "Reflective Science Writing"
- Sidney Perkowitz: "Changing Quantum Physics into an Essay: Can It Be Done?"

Friday, November 3, 4:15-4:45 PM

Refreshments **Bel-Air Terrace**

Friday, November 3, 4:45-6:15 PM

A. The Normative Discourse of Health **Metro**
Andrew McMurry, organizer and chair

- David Cassuto: "Healing the Land: Mary Austin and the Logic of Reclamation"
- Andrew McMurry: "'The Health of Human Culture': Wendell Berry's Agro-poetic Revision of Robert Frost"
- William Major: "Challenging the Discourse of Biomedicine: Anatole Broyard and Audre Lorde"
- Roddey Reid: "Healthy Families, Healthy Bodies: The Politics of Speech and Expertise in the California Anti-Second Hand Smoke Campaign"

B. Technology and Narrative **Bel-Air Patio**
Joe Tabbi, organizer and chair

- Joe Tabbi & Michael Wutz: "Technology and 20th-Century Narrative"
- Geoffrey Winthrop-Young: "Mann's Magic Media: A Case Study in Literature and Media Change"
- Linda Brigham: "Our Bodies, Our Selves: Activating the Percept in Virilio and Robbe-Grillet"
- John Johnston: "Mediality in *Vineland* and *Neuromancer*"

C. Internet Communities **Canyon(HI)**
Paolo A. Gardinali, organizer and chair; Bob Nideffer, commentator

- Paolo A. Gardinali: "Discipline and Punish in the Cyberspace: Usenet Sanctioning and Social Control"
- Joann Eisberg: "High Energy and Hypertext: or If Electronic Publication Brings Democracy to Physics, What Else Comes Too?"
- Wayne Miller: "Professional Exchange in the Age of Chaos"

D. The Birds and the Bees **Pavilion**
Leonard Koos, chair

- Stephen Germic: "Early Ornithology and Racial Mobility: Anxieties of Becoming Ethnic in 19th Century Science and Literature"
- Yvonne Noble: "Rex, the Microscope, and the Construction of the Female Body: Honeybees in the 17th and 18th Centuries"

E. S-F and Fantasy **Westwood(HI)**
Stephen Ogden, chair

- Subhash C. Kak: "Strange Echoes: Parallel Imaginations in Old Indian Literature and Modern Physics"
- Donald J. McGraw: "Where Men and Microbes Met: Tale the First: 'Plot'" (a short story)
- Frances D. Louis: "Acknowledging the Tiger: Savaging Science and Society in *Gulliver's Travels, The Stars My Destination* and *Roderick*"
- Elmar Schenkel: "Anti-Gravity: Matter and the Imagination at the End of the 19th Century"

F. The Future of Literature and Science--A Presidential Forum **Summit**
Lance Schachterle, moderator

- Lance Schachterle: "How We Got to Ten Years (Plus) at SLS"
- Stephen J. Weininger: "Where Do Scientists Fit Into SLS?"
- Mark Greenberg: "Reorienting the Practice of Literature and Science"
- James J. Bono: "History of Science and the Future of Literature and Science"
- N. Katherine Hayles: "Creating a Canon: Consolidating the Cultural Studies of Science"

Friday, November 3, 7:30-8:30 PM

Plenary Session **California Room, UCLA Faculty Club**

- Steven Pinker: "The Language Instinct"

Friday, November 3, 8:30-10:00 PM

Reception **UCLA Faculty Club**

Saturday, November 4, 8:30-10:00 AM

A. Narratives of Non-Human Others I: Narratives of Great Apes **Summit**
Nicholas Gessler, organizer and chair

- Francine Patterson (guest speaker): "The Evolving Narratives of Koko and Michael: Generative Language Use in an 'Emergent Literature'"
- Joanne E. Tanner: "Responding to Necessity: Invented Narratives of the Great Apes"
- Patricia Greenfield: "Language, Tools and Brain: The Ontogeny and Phylogeny of Hierarchically Organized Sequential Narrative Activity in Apes"

B. Science and Society I: Fictional and Real Dystopias **Canyon(HI)**
Stephen Hartnett, chair

- Luke Carson: "Veblen's Idle Cause"
- Alvin C. Kibel: "The Machine Stops: Forster's Virtual Reality"
- Richard S. Wallach: "Captain Ahab, Judge Holden, and the Iconography of Science in 19th Century American Nation Building"

C. Cyberplaces: Engendering Space for a Place/Time Continuum **Pavilion**
Nancy A. Barta-Smith, organizer and chair

- Nancy A. Barta-Smith & Sarah Stein: "Cyberspace/Cyberplace: Making Sense of Information Technology"
- Jaishree Kak Odin: "Negotiations between the Hypertextual and the Postcolonial"

D. Medicine and Illness II **Bel-Air Patio**
Jennifer Swift Kramer, chair

- Susan Connell: "The Champion Athlete: When Rare Personal Achievement and Modern Science Collide"
- Laura Otis: "Bleeding for Health: Gide and Freud"
- Kate Nickel: "The Company We Keep"

E. Chaos and Complexity II **Westwood(HI)**
Julie Hayes, chair

- Yves Abrioux: "Foucault, Chaos, Complexity"
- F. Paul Cilliers: "Complexity and Postmodern Knowledge"
- Richard D. Davis: "Model Metaphors: Mimicking Chaos Theory in the Humanities"
- Torin Monahan: "The Labyrinth of *Jealousy*: The Chaotics of Robbe-Grillet's Postmodern Novel"

F. Delivering the Male: Biological Determinism and the Institution of Masculinity **Metro**
Hilene Flanzbaum, organizer and chair

- Geoffrey Sharpless: "Making Bodies, Making History"
- Stuart Glennan: "Why Johnny Plays With Guns: Assessing Recent Work on the Biological Determinants of Masculine Behavior"
- Hilene Flanzbaum: "The Incredible Shrinking Man: Sexual Dysfunction in Modern Literature"
- Ross Shideler: "Undermining the Father: Darwinism, Scandinavia, and Ibsen's *The Wild Duck*"
- Blake Allmendinger: "Mother Lode: Technology, Male Midwifery, and Gold-Mining Literature"

Saturday, November 4, 10:00-10:30 AM

Refreshments **Bel-Air Terrace**

Saturday, November 4, 10:30-12:00 Noon

A. Medicine, Gender and Virtual Technologies **Bel-Air Patio**
Robert Markley, organizer; Laura Sullivan, chair

- Anne Balsamo: "Monsters and Heroes, Mothers and Fathers, Children and the State"
- Timothy R. Manning: "Computer Mediated Understanding of Health Threats"
- Robert Markley: "The Patient's Two Bodies: Medicine, Simulation, and Productivity"

B. Knowledge and Power **Pavilion**
Stuart Peterfreund, chair

- Cynthia Appl: "Heinrich Schirmbeck: Poetics for a Scientific Age"
- David Brande: "General Equivalents and Contingent Knowledge: Ideology and the Desire for Sense in Literature and Science"
- Terrance King: "Writing and Knowledge as Historical Correlates"
- Daniel Cordle: "Articulating Literature and Science: The Core Literature/Science Discourse and the Demise of the "Two Cultures"

C. Sustainability: Postmodern Neo-Ecology **Canyon(HI)**
(Panel Discussion)
Robert Chianese, organizer and chair

Robert Chianese, W. John Coletta, Laura Dassow Walls, Carl Maida and Christine Skolnik, panelists

D. Metaphor and Science II **Westwood(HI)**
Phillips Salman, chair

- Stephen Ogden: "Outflanking Gross and Levitt on the Right: How a Robust Approach to Radical Metaphor by the Literary Culture Can Debunk the Scientists' Own Higher Superstitions"
- Teri Reynolds: "Just Metaphors: Why We Shouldn't Ask for a Literal Use of Science in Interdisciplinary Studies"
- Elliot Visconsi: "A Prophecy Of Escape: Autoreferential Science and the Failure of Metaphor in Pynchon's *Gravity's Rainbow*"
- Andrew Russ: "Killing, Dying, and Surviving in the Mathematical Jungle of Physics: Some Examples of Metaphorical Terms in the Culture of a Science"

E. Embodied Discourse: The Role of Narratives and Visual Images in Scientific Talk and Theories I **Summit**
N. Katherine Hayles, organizer and chair; Brian Rotman, respondent

- Timothy Lenoir: "Machines to Think By: Visualization, Theory, and the Second Computer Revolution"
- Stefan Helmreich: "Artificial Life on the Edge of Inevitability"
- N. Katherine Hayles: "Gender and Game Theory"

F. Technology and Utopia **Metro**
Crystal Bartolovich, organizer and chair

- Crystal Bartolovich: "Cartopia"
- Paula Geyh: "Women on the Edge of Technology"
- Camilla Griggers: "Women and the War Machine"

Saturday, November 4, 12:00-2:00 PM

Luncheon and Business Meeting **Bel-Air Terrace**

Saturday, November 4, 2:00-3:30 PM

A. Visual Images II: Rhetoric in Visual Format **Metro**
Dain Borges, chair

- Julian Bleecker: "Building A Better Dinosaur: The Special FX of Technoscience"
- Miranda Paton: "Seeing How to Listen: Constructing the Criterion of Fidelity in Early Phonography"
- Michael L. Merrill: "Jacob Riis vs. the Eugenicists: The Visual Rhetoric of Biological Reductionism"
- W. J. T. Mitchell: "Dinosaurs, Totemism, and Modernity"

B. Entropy, Information, Misinformation and Noise **Pavilion**
Stephen Potts, chair

- James R. Saucerman: "Entropy as a Source of Terror in the Tales of Edgar Allan Poe"
- Lance Schachterle: "Low Entropy and Worse Communications in Pynchon's *Vineland*"
- Eric White: "Signifying Noise: The Crop Circle Phenomenon"
- Jay A. Labinger: "Entropy as Time's (Double-Headed) Arrow in Stoppard's *Arcadia*"

C. The Human Genome Project II **Canyon(HI)**
Barbara Heifferon, chair

- Karyn Valerius: "Genetic Consciousness? Sequencing the Genome and Reconstructing Ourselves"
- Paula Haines: "Popular Science: Controlling the Truth in the Human Genome Project"
- Val Dusek: "DNA as Language: Essence vs. Deconstruction"

D. Narratives of Non-Human Others II: Narratives of Artificial Intellects and Cultures **Bel-Air Patio**
Nicholas Gessler, organizer and chair

- Michael Dyer: "Computer Understanding and Invention of Textual Narratives"
- Marc Damashek: "Implications of Ignorance Based Processing: A Language-Independent Means of Gauging Topical Similarity in Unrestricted Text"
- Nicholas Gessler: "Generating Automatic Narratives in Artificial Cultures"

E. A Guest Session with Octavia Butler **Summit**
Frances Louis, organizer and respondent

- Octavia Butler (guest speaker): "*Furor Scribendi*"

F. Symmetries: Teaching, Writing, Literature, Science **Westwood(HI)**
Robert Franke, organizer and chair

- Robert Franke: "Changed Outcomes in Science-Based Courses when Using Literature"
- Larry Coleman: "Writing in Science Courses"
- Mary Ellen Pitts: "Writing Process and the Teaching of Science: Two Theoretical Points of Convergence"
- Clive Sutton: "Awareness of the Figurative in Science and Science Education"

Saturday, November 4, 3:45-5:15 PM

A. "Make It New": Modernist Artistic and Literary Responses to Early 20th Century Science **Metro**
Linda Dalrymple Henderson, organizer and chair

- Barbara J. Reeves: "Scientific Modernism--Modernist Science
- Linda Dalrymple Henderson: "Representing the Invisible: The 'Playful Physics' of Marcel Duchamp's *Large Glass*"
- K. Porter Aichele: "Jean Perrin and Paul Klee's 'Atomistic' Cubism"
- Allen Thiher: "Proust and Poincaré"

B. Languages of Early Modern Science: Children and Childbirth **Westwood(HI)**
Richard Nash, organizer and chair

- Eve Keller: "Representing Reproduction in Seventeenth-Century England"
- Debra Silverman: "Mary Toft's Hoax: Narrative Desire, Medical Genius and Female Imagination"
- Richard Nash: "Feral Children and Eighteenth-Century Language Instruction for the Deaf"

C. Popularizing Science **Canyon(HI)**
Yvan Silva, chair

- Jennifer Swift Kramer: "Infotainment a la Gobineau: Notes on *A Gentleman in the Outports*"
- Mark Schlenz: "The Greening of 'Gray Literature': Instrumental Rationality and Communicative Action in Writing for Environmental Studies"
- Laura Dassow Walls: "'Where There is Light There Will Be Eyes': The Theater of Popular Science"
- Jeffrey V. Yule: "Critiquing Science and Its Transmission: Information as Noise in Don de Lillo's *White Noise*"

D. AI and Cybernetics **Bel-Air Patio**
Nancy Barta-Smith, chair

- Ronald Schleifer: "Norbert Wiener, Information, and Postmodernism"
- Phoebe Sengers: "The Implicit Subjects of Artificial Intelligence"
- Elizabeth Wilson: "'Loving the Computer': Cognition, Embodiment and the Influencing Machine"

E. Embodied Discourse: The Role of Narratives and Visual Images in Scientific Talk and Theories II **Summit**
N. Katherine Hayles, organizer and chair; Brian Rotman, respondent

- Kenneth Knoespel: "Diagrammatics and the Interrogation of Mathematical Space"
- Sally Jacoby: "Co-Constructing Visual Narratives in Scientific Practice"
- Barbara M. Stafford: "The New Imagist: Visual Expertise in a Transdisciplinary Multimedia Society"

F. Theory, History and Narrative **Pavilion**
Thomas Cooksey, chair

- Patrick W. O'Kelley: "Gilman and the Creation of a New Empiricism"
- Lucia Palmer: "What is New in the New Historicism of Contemporary Literature, Philosophy and Science?"
- F. Irving Elichirigoity: "Historical Narrative in the Age of Machinic Vision and Computer Simulation: The Emergence of Global Spaces as a Case Study"
- Scott M. Sprenger: "Balzac, Archaeologist of Consciousness: The Case of *Louis Lambert*"

Saturday, November 4, 5:30-7:00 PM

A. Language, Epistemology, and the Cognitive Sciences I **Canyon(HI)**
F. Elizabeth Hart, organizer and chair

- F. Elizabeth Hart: "The Chaos of Language: Cognitive Linguistics and Complexity Theory"
- Phillips Salman: "Cognition, Poetics, and the *Nous Poetikos*"
- David Porush: "TELEPATHIES: The Advent of the Alphabet as a Model for the Transformation of Communication Promised by VR"

B. The Old New Physics: Quantum Mechanics and Relativity **Westwood(HI)**
Paul Plouffe, chair

- Henry McDonald: "Narrative Uncertainty: Wittgenstein, Heisenberg, and Narrative Theory"
- Timothy S. Murphy: "Beneath Relativity: Bergson and Bohm on Absolute Time"
- Stephen Potts: "The Muse of Uncertainty: Empirical Psychology and Scientific Modernism"

C. The Ontology of Science and the Arts **Pavilion**
Koen DePryck, organizer and chair

- Koen DePryck: "Art as Interdisciplinary Discipline"
- Karel Boullart: "Ontology, Triviality and Metaphorisation"
- Ilse Wambacq: "The Arts and Sciences in Education: Bridging Partial Ontologies"

D. Machine Visions, Body Slices and Video Memory **Summit**
Ramunas Kondratas, organizer and chair

- Ramunas Kondratas: "Imaging the Human Body: The Case of CT Scanning"
- Joseph Dumit: "Functional Brain Imaging, Personhood and the Many Literatures of Neuroscience"
- Barry Saunders: "Rituals of Diagnosis in the Age of Noninvasive Cutting"

E. Feminist Theories of Biology in Fact and Fiction **Bel-Air Patio**
(Panel Discussion)
Susan A. Hagedorn, organizer and chair

Roger Persell, Shoshana Milgram and Susan Hagedorn, panelists

F. Nature, Landscapes, and Voyages **Metro**
Maria Assad, chair

- Vranna Hinck: "Chaos and Christo: Celebrating the Complexifying of the World through Art"
- Janet Bell Garber: "For Fear of Increasing the Confusion: Early Nineteenth Century Attempts to Make Sense of the Natural World"
- Alice Jenkins: "Landscapes of Ignorance: Metaphors, Narrativity and the Organization of Knowledge"
- Philip K. Wilson: "Mechanistic and Vitalistic Perspectives of the Body in Enlightment Voyages to New Worlds"

Saturday, November 4, 9:00 PM--

Music and Dancing SLS Style **Summit**

Sunday, November 5, 8:30-10:00 AM

A. Cybernetics in Literature: Subjects and Subjectivities **Westwood(HI)**
Kevin LaGrandeur, organizer and chair

- Kevin LaGrandeur: "Who Sounds the Thunder?: Prospero's 'Machine' and the Anxiety of Agency"
- Vivianne Casimir: "Pascal and Frankenstein: A New Subjectivity"
- Sarah Higley: "Scientists and their Androids in Science Fiction: Edison, Dennett and Hawking"

B. The Role of Anecdote in Science **Metro**
(Panel Discussion)
Frank Durham, organizer and moderator

Marcella Greening, Thomas J. High, Kathryn Montgomery Hunter and Linda Layne, panelists

C. The Female Body in Medical Discourse and Literature **Canyon(HI)**
Carol Colatrella, organizer and respondent

- Tanya Augsburg: "Resisting Diagnosis: Staging the Female Medical Subject in Contemporary Women's Performance"
- Johanna X. K. Garvey: "'And She Had Made Herself!': (Re)generation of 'Woman' in Acker, Weldon, and Carter"
- Roger Persell: "Human Eating Disorders: The Drama of Clinical and Literary Discourse"
- Linda Saladin: "The Rhetoric of Surgery: Narratives for Patient Well-Being"

D. Bruno Latour: Pre-Modern, Modern and Non-Modern **Pavilion**
Richard Grusin, chair and respondent

- T. Hugh Crawford: "Mapping Migration: Some Thoughts on *Moby-Dick*, Matthew Fontaine Maury, and Bruno Latour"
- Philip Lewin: "Bruno Latour and the Image of the Human"
- Ned Muhovich: "Bringing Pym Home: Structure in Poe's *The Narrative of Arthur Gordon Pym*"
- Brian Noble: "The Evolutionary Saga of Human Liberation: Buried Nature/Culture Discourses in William Haviland's *Anthropology 7th Edition*"

E. Science and Society II: Ethics, Conscience, Ideals **Sico A**
Dale Pratt, chair

- Thomas Martin: "Ivan Karamazov's Vision of the Science as the Necessary Source of Miracle and Mystery for the Subjection of Man"
- John Bragin: "Scientific Witness and Moral Visionary: Primo Levi and the Culture of the Nazi Holocaust"
- Raphael Sassower: "Post World War II Technoscience"
- Yvan Silva: "Mahatma Gandhi: The Armamentarium of Non-Violence"

Sunday, November 5, 10:15-11:45 AM

A. Poetry and Science **Sico A**
Steven Carter, chair

- Beth Browning: "'There is Neither Up nor Down to It': Anti-Organicism in the Poetry of Marianne Moore"
- William Crisman: "Humphry Davy and John Keats: Romantic Redefinitions of Matter and Mind"
- Cynthia Guidici: "'Hand in Hand with Science': The Frame of Tennyson's *The Princess*"
- Donna McBride: "Incantory Magic: Female Images of Alchemy and the Sacramental in the Poetry of Lucille Clifton and Jane Kenyon"

B. Language, Epistemology, and the Cognitive Sciences II **Pavilion**
F. Elizabeth Hart, chair

- Jefferson Faye: "The Birth and Growth of the Cognitive Novel: Joseph McElroy's *Plus*"
- Maria L. Assad: "Poetic Obscurity and Dynamical Discourse Theory: The Case of Mallarmé"
- Joseph Carroll: "An Evolutionary Theory of Literary Figuration"

C. Constructing and Deconstructing the Body **Canyon(HI)**
Philip Wilson, chair

- Jacqueline M. Foertsch: Illness as Metaphor ≠ Metaphor as Illness: A Critique of Susan Sontag's Influential Theory"
- Barbara A. Heifferon: "Deconstructing Colonial America's First Medical Compendium: A Surprising Heteroglossia"
- Jamil M. Mustafa: "Constructing Degeneration: *Dracula*, Henry Maudsley, and the Lunatic Asylum"

D. 17th Century Science **Sico B**
Laura Otis, chair

- Sylvia Bowerbank: "Science and the Self-Technologies of Early Modern Women"
- Tom Kealy: "The Poetics of Life: Natural History and Literary Traditions in the Seventeenth Century"
- Robert E. Stillman: "Metaphors, Monsters, and Natural Philosophy in Seventeenth Century England"
- Douglas L. Hollinger: "The New Enfeoffees: Staking Claims to Nature in Early Modern English Science"

E. "Worth A Thousand Words": Documentary Photography and the Problem of Proof Positive **Metro**
Stanley Orr, organizer and chair

- Stanley Orr: "Documentation and Detection in Antonioni's *Blow Up*"
- Beth Rayfield: "Documentation and Desire: Popular Anthropology and the Stereographic Representation of the Sexualized Racial Other"
- James Goodwin: "Documentation in Black and White: The American South and the Depression"

F. Hypertext **Westwood(HI)**
David Porush, chair

- Stephanie Strickland: "Science Themes and Figures in a Hypertext Poem: *True North*, or, Willard Gibbs Meets Emily Dickinson"
- Marjorie C. Luesebrink: "'Upward Beyond the Constant Flow There Was Moondling': Writers, Rhetoric, and Technology in the Electronic World"

Sunday, November 5, 11:45-12:00 Noon

Refreshments **Bel-Air Terrace**

Sunday, November 5, 12:00-1:30 PM

SLS Wrap-up Session: The Future of SLS **Bel-Air Terrace**

Friday, November 3, 8:30-10:00 AM

A. Metaphor and Science I **Westwood(HI)**
Anne Gatensby, chair

- Amir Alexander: "The Imperialist Space of Elizabethan Mathematics"
- Paul V. Anderson: "Thomas De Quincey, Immanuel Kant, and Lord Rosse's Telescope: Optics as Metaphor and Metaphor as Optics"
- Marianthe Karanikas: "On Metaphor and Measurement"
- Julie A. Reahard: "A Particularly Pleasing Model: Mathematics as Shaper of Scientific Metaphor"

B. The Technological Invasion of the Living Space **Summit**
Charles Bazerman, organizer and chair

- Charles Bazerman: "The Turned-On Home: Incandescent Lighting and Changing Domestic Imagery in the Early Edison Years"
- Laura Holliday Butcher: "Techno-Culture in the Kitchen"
- Patrick B. Sharp: "Post-Atomic Home/Lands: Representations of the Bomb in North American Minority Literatures"

C. Autobiographies and Biographies of Scientists **Canyon(HI)**
Carolyn A. Barros, organizer and chair

- Diana B. Altegoer: "The Scientist as Text: The Sense of Self in the Writings of Robert Boyle"
- Johanna M. Smith: "Discourses of Exploration and Colonization in Francis Galton's *Memories of My Life*"
- Carolyn A. Barros: "Chain Reactions: Science as Politics in the *Recollections* of Eugene P. Wigner"
- Livia Polanyi: "Constructing the Scientist as Figure: Constructing All Others as Ground"

D. Science and 19th Century Literature **Pavilion**
Lori Wagner, chair

- Lawrence Frank: "'Mr. Vestiges': *Bleak House* and a Crisis in Narrative"
- Donald M. Hassler: "Anthony Trollope and Philosophic Radicalism: A Case for Newness"
- Martin Kevorkian: "Nineteenth-Century Particle Metaphysics: Hawthorne's Puritan Lucretius"
- Goldie Morgentaler: "Preformation and Other Theories of Heredity in the Novels of Charles Dickens"

E. Visions of the Feminine Body **Bel-Air Patio**
Marcella Greening, chair

- Nancy Cervetti: "Rewriting the Rest Cure: Medical Discourse, The Female Body & Gilman's Response"
- Ellen Esrock: "Is the Mental Gaze of the Reader Male? Francis Galton vs. Luce Irigaray"
- Rebecca Merrens: "Bodies of Evidence: Theater, the Feminine, and the Production of Anatomical Knowledge in Jacobean Culture"
- Teresa Winterhalter: "*Le corps lesbien* and the Politics of Love under a Microscope"

F. The Human Genome Project I: Re-Thinking the Genetic Paradigm **Metro**
Alan Wasserstein, organizer

- Alan Wasserstein: "Molecular Biology: A Post-Modern Reading"
- Richard Strohman: "Limits of a Genetic Paradigm in Biology and Medicine"
- John Wells: "Non-Darwinian Evolutionary Biology"

The Imperialist Space of Elizabethan Mathematics

Amir Alexander
Program in the History of Science
Stanford University

The basic argument is that some of the fundamental techniques developed by Elizabethan mathematicians (Thomas Hariot in particular) were shaped by the rhetoric of exploration and discovery prevalent in the travel literature of the time. The mathematicians adopted the standard rhetoric of exploration, and applied it to their mathematical investigations. They came to view their researches as voyages of dicovery in their own right - seeking to unveil hidden mathematical treasures. Mathematics came to be viewed as an undiscovered country, much like the unexplored lands of America. As a result, the structure of mathematical objects came to closely resemble the geography of the foreign lands. In particular, I argue, Hariot's mathematical atomism was developed through the application of the narrative of exploration to the study of the geometrical continuum.

THOMAS DE QUINCEY, IMMANUEL KANT, AND LORD ROSSE'S TELESCOPE: OPTICS AS METAPHOR AND METAPHOR AS OPTICS

Paul V. Anderson
Northwestern University

In February of 1845 William Parsons, third Earl of Rosse (1800-67) and later president of the Royal Society (1849-54) erected a telescope with a polished metal speculum of seventy-two inches in diameter--which far surpassed William Herschel's telescopes in range--at his estate. Lord Rosse, aided by the power of his enhanced apparatus, was the first to discover the spiral structure of nebulae. Rosse's telescope, in turn, inspired Thomas De Quincey to publish in Tait's Edinburgh Magazine for September 1846 what was ostensibly a review of John Pringle Nichol's book Thoughts on Some Important Points Relating to the System of the World. However, this essay, in the collective edition of De Quincey's writings, which he himself edited, was given a new title, "System of the Heavens as Revealed by Lord Rosse's Telescopes", which more faithfully reflected its manifest subject.

Yet De Quincey's essay begins with an extended analysis of and attack on Immanuel Kant's attempt to gauge the age of the earth in his Allegemeine Naturgeschichte und Theorie des Himmels, published in 1755. Accordingly, this presentation will unearth a genealogy for De Quincey's essay on Rosse's telescope through the ways in which De Quincey figures Kant in his earlier writings on the critical philosopher. For De Quincey the opium-eater, Kant and his drug of choice are substitutes for each other and both serve as figures of transport as such. In other words, at the very least, both Kant and opium are figured by De Quincey as metaphors in the literal sense, if not metaphors of metaphoricity as such.

By 1846, however, well after De Quincey had broken his youthful addiction to Kant, though not his opium habit, the powers of Rosse's telescopes serve as a replacement for the absence of Kant in De Quincey's pharmacy. Thus, this presentation will explore the ways in which De Quincey achieve this substitution of Rosse's telescopes for the figure of Kant in which the replacement of the latter by the former in De Quincey's medicine cabinet begins with polemics. In the process of substituting one for the other, however, De Quincey alters his understanding of what grounds metaphor as a figure of transport. In the case of Rosse's telescopes, as this paper will show, metaphor is refigured by De Quincey from a vehicular tropology to a cosmological tropology based in a theory of optics.

ON METAPHOR AND MEASUREMENT

Marianthe Karanikas
Southwest Missouri State University

Can we reconcile metaphor and measurement? The knowable in science is often equated with the measurable. However, physicists like Roger Jones, philosophers like Mary Hesse, and literary theorists like N. Katherine Hayles have argued that scientific discourse is akin to metaphor. This view implies that nature as a dynamic whole is immeasurable and inexpressible. The best that scientific discourse can do is to provide an incomplete representation of nature. On the other hand, scientists like biologist Lewis Wolpert, philosophers like Susan Haack, and literary theorists like Paisley Livingston have argued that nature is knowable through science. Measurement is the cornerstone of rigorous scientific empiricism.

Building upon N. Katherine Hayles' notion of "constrained constructivism," I show that science can be both metaphorical and rigorous, that metaphor and measurement are complementary. I discuss the cases of James D. Watson, Francis Crick, Barbara McClintock, and Candace Pert to show that aspects of nature can be viewed as measurable realities at the same time the observer is inseparable from the observed.

"A Particularly Pleasing Model": Mathematics as Shaper of Scientific Metaphor

Julie A. Reahard
St. John's College, Santa Fe, New Mexico

Those of us who spend relatively little time working in the sciences rarely consider the powerful tool that mathematics is and how it works to shape scientific models of reality. What is really being said when an internally consistent system such as this is superimposed upon the natural world? Euclid created an internally consistent mathematical system which set out to prove the truth of certain "obvious" and "not so obvious" statements of relationship between components of that system. Archimedes applied Euclid's system to the natural world in order to discover the world's "natural" relationships. Modern scientists still consider the mathematical model to be the most useful way of representing nature. The assumptions behind this belief provide insight into how scientists create and judge "good stories" or "theories" about the world.

The Turned-On Home: Incandescent Lighting and Changing Domestic Imagery in the Early Edison Years

Charles Bazerman
English Department, University of California, Santa Barbara

Edison and his companies in order to establish electric light and power had to enter three markets--the industrial, the municipal, and the domestic. The domestic market was the most complex, in that the choice making was spread among many individual consumers, the notion of the individual and the family identity being expressed through consumption was just emerging in this period, the domestic space was saturated with complex and evolving meanings, and attitudes toward domestic space were altering as America urbanized.

Electric lighting in order to enter and transform the domestic space had to speak to all these issues. In doing so it became an element in the creation of the modern, active consuming household in which individuals within a nuclear family consume together--thereby creating identities, satisfying individual desires, and fulfilling themselves through their active lives. By placing the early advertisements and other consumer-oriented representations of the Edison companies and related vendors in the context of recent scholarship on domestic and comsumer culture in late nineteenth century America I will examine how Edison light positioned itself as part of an emergent, active, sexualized, consuming life-style, bounded by the securities of a nuclear family, and tied into the assurances of successful social relations and class position. In this way the early marketing of electric lighting was a forerunner of our contemporary utility and appliance advertising and a consumer life-style culture.

TECHNO-CULTURE IN THE KITCHEN

Laura Holliday Butcher
University of California, Santa Barbara

Critical reception of Don DeLillo's 1984 novel White Noise has focused primarily (and with good reason) on the central role of the book's representations of consumer culture and technology, forces that are emblematic of postmodern Middle America. While few would argue that these forces do not pervade White Noise, I am intrigued by the ways in which they make their way -- or perhaps do not make their way -- into the kitchen. The narrator of White Noise, Jack Gladney, describes his kitchen as a space filled with humming, grinding, not-so-vaguely threatening machines, and a space where "the levels of data are numerous and deep" (6, 47). But at the same time, the kitchen and the familial interactions that take place in it are pleasurable for Jack precisely because they represent an insulation from the sinister and overwhelming world outside of his domestic space. Moreover, there is an almost anti-technological quality to Jack's kitchen, and at times his fascination with the objects and appliances in his kitchen borders on the absurd.

I argue that, unlike many other aspects of the novel, the ambivalence underlying Jack's descriptions of his kitchen and the activities that occur there is not a characteristic exclusive to postmodernism. Rather, this ambivalence has colored debates about the social role of the kitchen since the early years of the 20th century, and it contains material, ideological, and psychic valences. On the one hand, given the large-scale movement of goods necessitated by the preparation of food, as well as the proliferation of kitchen appliances, prepared foods, and other kitchen technologies, the kitchen is the most public and technologically permeated of domestic spaces. Likewise, ideologies of extreme cleanliness and maximum efficiency in food preparation imbue popular constructions of the kitchen with qualities appropriate to a laboratory or factory. On the other hand, the metonymic relationship between the kitchen, sustenance, and the body of the mother serves to figure the kitchen as an anti-technological space. In this space, labor does not just produce food and related services; labor itself is produced as a valuable psychic and ideological commodity -- the "labor of love."

POST-ATOMIC HOME/LANDS: REPRESENTATIONS OF THE BOMB IN NORTH AMERICAN MINORITY LITERATURES.

Patrick B. Sharp
Dept. of English
Univ. of California, Santa Barbara

To several communities in North America, the production and detonation of atomic bombs near or within their domestic space has been disruptive to say the least. In this talk I will discuss the relationship of the development and detonation of atomic bombs to conceptions of home/lands in the works of Leslie Marmon Silko and Joy Kogawa. Both of these authors use their communities' lived experiences of the bomb to negotiate and redefine relationships between cultural identity, national identity and geographical space (home/land), while at the same time responding to struggles between their communities and the government. Though there are a number of culturally and historically specific differences between these author's experiences and narratives, each relates the production and deployment of the bomb on their home/land to their marginalization within North American culture. In Ceremony, Silko constructs the fragmentation of Laguna Pueblo identity and community as the product of white intrusion upon and perversion of tribal lands. While the novel is set in the period immediately following World War II, Silko is responding in part to the situation on the Laguna Reservation in the early seventies. The Jackpile Mine, which dominated the landscape of the reservation, had brought material wealth and a breakdown of traditional culture among many Laguna. The high point of the perversion of the land in the novel, which she relates to traditional Laguna "witchery," is the mining of uranium and detonation of the bomb on (or near) tribal lands. Through the protagonist Tayo's condemnation of materialistic capitalism and reintegration into Laguna life, Silko clearly articulates that the sickness, debauchery and misery of the modern reservation will be alleviated only through a return to traditional culture.

In Obasan, Kogawa engages the contemporary issue of reparations from the Canadian Government for the the internment of Canadian Japanese during World War II. Kogawa does this by examining institutionalized marginalization of a Canadian Japanese woman (Emily) and her family within Canadian society during World War II, and how this is directly related to the dropping of the bomb on Japan. Forcibly separated from her home, mother and national identity at the beginning of the war, Emily engages in a recounting of her childhood in an attempt to reassemble a sense of home/land. Of all of the things taken during her forced internment, the greatest absence she feels is that of her mother. The climax of the text reveals that her mother has been killed by the bomb dropped on Nagasaki. The narrator thus directly links her cultural marginalization and search for a home/land to the dropping of the bomb. I will conclude by discussing the connections that both Kogawa and Silko make between Japanese and Native Americans, and how these connections are related to the atomic bomb.

The Scientist as Text: The Sense of Self in the Writings of Robert Boyle

Diana B. Altegoer, Asst. Professor of English, Old Dominion University, Norfolk, Virginia 23529

The purpose of this paper is to determine the construction of self in the work of the seventeenth-century scientist Robert Boyle. In his *Christian Virtuoso*, Boyle claimed that there was no inconsistency between being an "industrious virtuoso" and a good Christian, disputing those ill-informed infidels and libertines who think that religion and philosophy are incompatible. Indeed, throughout his career as a writer and as a scientist, Boyle was concerned about the reputation as well as the motivation of the scientist or philosopher. Like More and Erasmus before him, Boyle wished to make truth-claims valid, and not merely a matter of political propaganda. As such, in many of his dialogues Boyle adopted a persona he called Carneades, a Boyle, yet not a Boyle who was designed to give the various truth claims the appearance of objectivity and detachment. Experiments would be accompanied by illustrations, by letters, dialogues, reports, descriptions, sometimes even quotations from sermons, meditations, and oratory. All of these devices proved to be a useful extra which was intended to demonstrate the scientist's learning and labor and further emphasize the validity of the particular claims for truth.

Unlike Hobbes or Descartes, who validated the efforts of the individual scientist, Boyle stressed the collaborative efforts of numerous investigators (the corroborated evidence and matters-of-fact of eye-witness testimony) and relied upon the practices and procedures of common-law jurists. Eye-witness accounts would be used to verify results; in this scheme, the comparison of two corroborating accounts would validate the reality represented, as well as the human minds which constructed the testimony. Similarly, Boyle praised the continental commonwealths that promoted talent, a work ethos, and public service. The road to becoming a reliable witness was long and arduous; signs of reliability would include experience, discretion, a balanced (indifferent) personality, a lack of "enthusiasm" or passion. The experimentalist would be like the common-law attorney: using artifical reason (not dialectical analysis), asking how precedent should apply to present cases, and relying upon "moral demonstration." Trials (experiments) would be a public affair; witnesses would testify in an open court. In his work *Things Said to Transcend Reason*, Boyle asserted that the nature of those things not capable of mathematical or metaphysical demonstrations, and yet being really truths, "have a just title to our assents...it being sufficient that they are strong enough to deserve a wise man's acquiescence in them." Boyle also relied upon the common law's idea of probable cause, i.e. the absence of specific reasons to doubt. "Though each testimony single be but probable, yet a concurrence of such probabilities may well account to a moral certainty" (*Some Considerations about Reason and Religion*).

In conclusion, Boyle's aim was to construct a trustworthy persona, and thus to present himself as a reasonably accurate and reliable instrument in the weighing of scientific knowledge.

Discourses of Exploration and Colonization in Galton's Memories of my Life

Johanna M. Smith
Bowdoin College

While Francis Galton's Memories of my Life (1910) is an autobiography, it is also a narrative of travel and social improvement which invites comparison with two related discourses of exploration. Although Galton's Memories mentions only briefly the 1882 contretemps in which he challenged Henry Stanley's claim to have found not only Livingstone but the source of the Nile, my paper uses those mentions along with Galton's narrative of his own African travels in order to analyze mid- and late-century controversies over exploring and colonizing Africa. My paper then juxtaposes Memories's record of Galton's discoveries in anthropometry and eugenics with another text of exploration, General William Booth's In Darkest England and the Way Out (1890). I argue that, just as Galton's scientific research in classifying fingerprints and tracing heredity aimed at "race improvement" through eugenics (Memories 310), so Booth's plan for regimenting and employing the poor through the Salvation Army aimed at social improvement through colonizing London's "submerged tenth" (Darkest 24). I close with some implications of the rather astonishing success of both Galton's eugenics and Booth's Salvation Army as ideological vehicles of late-Victorian imperial and domestic colonizations.

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Chain Reactions
Science as Politics in the *Recollections* of Eugene P. Wigner

Carolyn A. Barros
Department of English
The University of Texas at Arlington

Eugene P. Wigner, born in Hungary in 1902, was an American physicist whose research on nuclear chain reactions aided in the development of the atomic bomb. He won the Enrico Fermi Award in 1953, the Atoms for Peace Award in 1960, and along with Jo Jensen and Marie Goeppert-Mayer, won the Nobel Prize in physics in 1963.

Wigner's *Recollections* (as told to Andrew Szanton) offers a portrait of a scientist whom few outside the world of physics knew and relates the history of a life-long relationship between four prewar Hungarian scientists: Wigner, John von Neumann, Leo Szilard, and Edward Teller.

Recollections is not unique in its emphasis on relationships within scientific communities. Girolamo Cardano's *De Vita Propria Liber*, one of the first autobiographies written by a scientist, speaks of Cardano's attempts to "garner fame" among the medical men in Renaissance Italy. Charles Darwin's *Autobiography* speaks of his determination to "join that group" of renown scientists practicing in Victorian England. They, among others, gained entrance into their scientific communities by virtue of their discoveries and continued as members by virtue of their ongoing practice; they were linked by their scientific pursuits. In this presentation I explore how the Hungarian/American scientific community of four was twice-linked, first by their scientific practice, but more importantly, by ties even stronger than science, their politics. *Recollections* can be read as autobiography *and* politics. I will show how the personal, social, and political experiences of Wigner and his colleagues informed their scientific pursuits, how their early years in Hungary, their enduring friendship, their hatred of Hitler and the Nazis influenced their work on the Manhattan Project--how science is political. I will discuss how World War II caused an explosion in physics, how, after the war, university physics faculty grew and government funds for high-energy physics research expanded--how politics drives science. I will conclude with a discussion of how the four Hungarian/American scientists became politicans, how "the men who made the bomb" were called upon to testify before Congress on national security matters, weapons, disarmanent, and world government. As Wigner relates, "the pace of public debate, our excitement with our new status, the popular fear and awe of the atomic bomb--all these things led physicists to speak like political experts. . . . The atomic bomb made us all little politicians."

CONSTRUCTING THE SCIENTIST AS FIGURE: CONSTRUCTING ALL OTHERS AS GROUND

Livia Polanyi
Stanford University

The biographies and autobiographies of scientists often construct the heroic (male) scientific actor in relation to an Other or set of Others. In this paper, I will examine (auto)biographic works of mid twentieth century scientists and show how the construction of the historical epoch, other scientists or an individual's private life are used to create a textual Other against which the life and work of the scientist is rendered meaningful. Texts which will be used include the double biography of Lawrence and Oppenheimer in which each functions as the doppelganger and unknowable foil of the other and the biography of Turing in which his life as a scientist and his life as a homosexual man are treated as reflexes of one another. Biographical/autobiographical treatments of Manhattan Project scientists other than Lawrence and Oppenheimer will be treated as well to show how both the times and the acknowledged contributions of others are use to make and defend claims for scientific greatness.

"Mr. Vestiges," Bleak House, and a Crisis in Narrative

Lawrence Frank
Department of English
University of Oklahoma

The opening paragraphs of Charles Dickens's Bleak House (1852-53) point explicitly to the geological and cosmological controversies of the day, particularly to those surrounding the evolutionary hypotheses of the Vestiges of the Natural History of Creation (1844). In spite of the teleological and theistic claims of the anonymous "Mr. Vestiges," defenders of Natural Theology attacked his suggestion that organic life had appeared on the earth without divine intervention through the working of natural law alone. With such a hypothesis the Vestiges had challenged both literal and figurative readings of the Genesis creation story, further deepening a nineteenth-century crisis in narrative.

The crisis is captured in Bleak House with its opening description of London from two incompatible perspectives, one implicitly Scriptural, the other implicitly evolutionary, acknowledging at once the argument of the Vestiges, with its reliance on the nebular hypothesis, and attacks on the book by men like Adam Sedgwick and William Whewell, Cambridge dons writing as defenders of established orthodoxies. In the Edinburgh Review (July 1845) Sedgwick speculated upon whether Mr. Vestiges were a madman--or a woman; he railed against the author in language anticipating motifs in Bleak House, suggesting that Mr. Vestiges' errors would be less offensive had "he told us that our geological documents were mutilated and obscure...like worm-eaten documents of an old record office,...so far gone that no mortal could make a connected history out of them." While, in his Indications of the Creator (1845), Whewell rejected Mr. Vestiges' use of the nebular hypothesis and dismissed those like Geoffroy Saint-Hilaire who said that the study of nature could dispense with teleology.

Within this context, the present-tense narrative of Bleak House can be seen as a geological account attesting to the illusory nature of traditional conceptions of time and offering a morphological, non-teleological investigation of Victorian society conceived as a geological system. Esther Summerson's first-person, past-tense, and end-directed account reveals her attempt to give chronological, causal form to her life, rendering her experiences intelligible in human and religious terms.

Through the interplay between the two narratives on the printed page, Bleak House offers two forms of verbal activity and narrative structure that dramatize a narrative crisis that persists into the twentieth century. Such experiments explore the kinds of narratives available to make life intelligible; they also present two forms of verbal and narrative activity that were to be associated later in the century, through the force of metaphor, with the temporal, causal structure of consciousness and the atemporal, associative structure of the unconscious as set forth in psychoanalytic discussions of the human mind.

ANTHONY TROLLOPE AND PHILOSOPHIC RADICALISM: A CASE FOR NEWNESS

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In his recent biography, N. John Hall contrasts the gruff and robust novelist to several radical thinkers whose incisive, new ideas intrigued Trollope. In particular, he recounts a dinner party about which Trollope said, "Stuart Mill is the only man in the whole world for the sake of seeing whom I would leave my own house on a Sunday" (278). But he had mixed feelings about the ideas promoted by Mill, Morley, and other radicals so that Hall can observe that Trollope was like a bull in the intellectual chinashop of the radicals at that dinner. In fact, Trollope knows that the new ideas in both the hard sciences and the softer, social sciences are the seedbed of progress at the same time that he retains his comfortable, Whiggish ideas about gradual social amelioration. In his powerful autobiography and in several late novels, his theory of social "distance" and his commitment to honesty about himself and about his tastes may be read as energetic examples of utilitarian thought and, even, of Godwinian Necessity. In particular in his view of women, Trollope's robustness remains soaked in old and traditional images but includes just a touch of the "monster" sense of newness from the less robust, more thoughtful Mill.

NINETEENTH-CENTURY PARTICLE METAPHYSICS: HAWTHORNE'S PURITAN LUCRETIUS

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Nathaniel Hawthorne's "Wakefield" (1835) offers a story of swerves. A man touched with perhaps a bit of "strangeness" ("indefinable, and perhaps nonexistent") ,plans to "perplex" his wife by an unannounced absence of a week. Before his first divergence from linear routine "Wakefield himself, be it considered, has no suspicion of what is before him"; this whimsical outing begins with a mere "stepping aside for a moment." Like an atom in a Lucretian fall, at first obeying the absolutely straight parallel lines of his local Democritan system, Wakefield "swerves a little, but no more than the least bit." The consequences which ensue from Hawthorne's fictional illustration of the clinamen serve to complicate the traditional Lucretian metaphysical interpretation of the physical situation. Rather than emphasizing the possibility of non-linear behavior as a guarantor of free will, the trajectory of Hawthorne's tale incorporates a demonstration of Jonathan Edwards' Calvinist rebuttal to the Epicureans.

But Hawthorne does not rest easy in his Edwardsean conclusion to "Wakefield"; he will continue to explore the possibilities of the Lucretian swerve as a key plotdevice in his later fiction. I will conclude by briefly considering Hawthorne's continuation of the debate on determinism in, for instance, The Blithedale Romance (1852), and in The Marble Faun (1860). In these works, Wakefield's clinamen returns in the movement of Zenobia, who "swerves one hair's breadth out of the beaten track"; and of Miriam, who had "stept aside, for an instant."

Preformation and Other Theories of Heredity in the Novels of Charles Dickens

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The mechanics of heredity were poorly understood in Dickens's time and contemporary theories were all more or less incorrect. Nevertheless, when applied to literature, even a wrong-headed theory may yield philosophical and aesthetic rewards. In my paper I propose to touch on three hereditary theories which were current during Dickens's lifetime, in order to suggest their influence on his fiction.

The most important of these--and the oldest--is preformation. Dickens exploited aspects of preformation in his novels, and his philosophical views seem to be largely in tune with its implications. Because it defines generation as a process that is both regular and repetitive, preformation afforded Dickens a way of accounting for human virtue without resorting to supernatural explanations. If virtue is defined as a hereditable quality, then it falls within the domain of human agency, and if heredity is understood as a process of near-perfect duplication from one generation to the next, then virtue may be propagated and perpetuated through descent.

This fits in with two other hereditary theories whose influence may also be felt in the Dickensian novel--blended heredity and reproduction--both of which emphasize the duplication of traits from one generation to the next so that children become--in Dickens's words--the "living copies" of their parents. My presentation will relate these concepts of heredity to certain crucial aspects of Dickens's fiction, as a way of demonstrating how literature may profitably plunder science for its purposes.

REWRITING THE REST CURE:
MEDICAL DISCOURSE, THE FEMALE BODY & GILMAN'S RESPONSE

Nancy Cervetti
Avila College

The years 1870-1910 comprised a period of literary, scientific, and political contestation over women's rights, sexuality, and education. In this presentation I argue that literature occupied a central position alongside medical discourse in this debate. I focus on S. Weir Mitchell's literature, medical discourse and rest cure treatment and Charlotte Perkins Gilman's literary responses as dialogic points of entry into the debate.

Mitchell, considered the greatest nerve specialist in America, was a "literary physician," publishing several books of poetry and eleven novels as well as medical books and hundreds of articles and addresses. I examine his attitude toward the female body and details of the rest cure, drawing on his novels and three of his medical books, Fat and Blood (1877), Lectures on Diseases of the Nervous System, Especially in Women (1881), and Doctor and Patient (1888). After the birth of her daughter in 1885, Gilman experienced a period of deep depression and traveled to Philadelphia to consult Mitchell. After the rest cure treatment, Mitchell sent Gilman home telling her to "Live as domestic a life as possible. Have your child with you all the time. . . . And never touch pen, brush or pencil as long as you live."

Earlier comments in her autobiography attest to Gilman's respect for science; yet, she was able to reject Mitchell's advice, leaving her husband and moving to California. She wrote The Yellow Wallpaper and Herland, and became an influential theorist, socialist writer and lecturer. In The Yellow Wallpaper the rest cure leads to insanity. In Herland Gilman imagines female bodies in direct opposition to those described by Mitchell - bodies tall, strong, and agile, wholly unafraid and wise, eliminating what the three men visiting had always "thought essentially feminine."

Like other nineteenth-century doctors, Mitchell felt he was basing his conclusion on science. However, in retrospect, we see that he was working deductively to translate cultural expectations into medical discourse in a highly manipulative way. Such science in the service of ideology began with an androcentric world view, seeing female bodies through the need to maintain patriarchy rather than women's health. Literature provided a public arena in which women writers could respond to and subvert medical constructions of the female body.

Is the Mental Gaze of the Reader Male?
Francis Galton vs Luce Irigiray

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Scholars in literary, film, and cultural studies have been concerned for decades with the role of vision in women. Prominent in these discussions is Luce Irigaray's claim that vision is "foreign to female eroticism." Although scholars have examined many areas of knowledge and experience for manifestations of a phallocentiric metaphor of vision, few have inquired into the imaginative, mental gaze of a reader. The argument here is that an understanding of a reader's mental imagery, and, by extension, a viewer's perceptual imagery, must consider empirical evidence for gendered characterizations of viewing and also various co-existing, ideologically-charged cultural constructions.

Empirical research on eroticism suggests, contra the prevalent linking of vision and male eroticism, that vision plays a role in women's sexual arousal, and empirical research on cognition suggests, contra the view that men are more skillful at using imagery, that women are more efficient at producing static forms of visual imagery and men at forming moving imagery. In regard to cultural/ideological metaphors, contra the widespread association between vision and masculinity, vision has also been used to characterize women's experience and behavior. Consideration of the overlap between the two domains of the empirical and the cultural/ideological is especially instructive in the case of the early twentieth century research of Sir Francis Galton, whose research liinked to vision to feminity under the press of ideological argument.

key words: gaze, mental imagery, vision, Galton, Irigaray, eroticism, gender

BODIES OF EVIDENCE: THEATER, THE FEMININE, AND THE PRODUCTION OF ANATOMICAL KNOWLEDGE IN JACOBEAN CULTURE

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This paper explores modes of knowledge-production in Jacobean England which enabled the creation of seemingly stable meaning from fragmenting the body. Anatomy, of course, produces information and evidence about the body by variously dissecting, flaying, and dismembering it. As Jonathan Sawday's discussion in Renaissance Bodies notes, England during the seventeenth-century was peculiarly lacking an operating public anatomy theater of the sort that could be found in Padua or Leiden. I shall argue that England instead possessed another sort of anatomy theater -- the public stage. For if we accept that public anatomy theaters existed as much to prove the "triumph[ant]" authority of the anatomist and of science (116) as they did to produce physiological truths about human anatomy, then we may witness within many Jacobean tragedies not only a similar interest in the body and the corruptions it conceals from view, but also in (re)producing as authoritative male figures who place female bodies within experimental and often anatomizing conditions. In Ford's 'Tis Pity She's a Whore, for example, the feminine is brought to experimental and anatomical "trial" not only to expose publicly her sins, but to reassert as powerful the male inquisitor who probes and "proves" them.

I am not, of course, arguing that experimental performances or anatomical theaters such as those operating in Padua are the same epistemologically or practically as Jacobean playhouses, although they shared many performative and entertainment-oriented practices -- both, for example, served food and drink, used musical accompaniment, and employed scenery and props. I am, however, arguing for ideological and material continuity -- articulated in representations of the feminine -- between the public theater in Jacobean England and the performative experiments which became the staple of Restoration scientific practice. Carolyn Merchant persuasively exposes the metaphorical associations used by early modern science which link women and nature, and thus legitimate the violation of nature-as-woman. While her analysis undergirds my thesis, I contend that these associations were not only metaphorical but material; that is, women and nature are not only figured as "like" each other, but, in Jacobean culture, they were controlled and examined in experimental conditions which defined them isomorphically.

Molecular Biology: A Post-Modern Reading

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A powerful ideology underlies the Human Genome Project, the international effort to determine the genetic map and nucleotide sequence of human DNA. The claim is that the self is prescribed by the genes ("you are your genes"); individual and social behaviors and pathologies are genetically determined. If this is so the Project will define an idealized self: idealized in the sense of being universal (transcending the individuals from whom the genetic material is derived), normative (establishing a touchstone for health and deviancy), and essential, an essence of humanness. The self so defined is a virtual self: disembodied information.

The idealized self is as germane to literary expression as it is to molecular biology. I want to compare how modern technologies, literary and molecular biological, act upon, modify, normalize or idealize the individual. It is sometimes assumed that literary strategies undermine existing power relations while scientific strategies reinforce such relations: Genetic testing could affect employment or insurability; the disadvantaged situation of a minority could be "justified" by genetic differences. However, literary tropes of transcendence have surely helped to frame the ideology of contemporary molecular genetics. Its goal is to express the self in the letters of a unique language (the symbols of nucleotides); to inscribe an ideal self (archetypal, symbolic, supra-individual) in the manner of novel or epic. The Project depends on the literary trope that character is fate, as in the Victorian novel's anodyne that "blood will tell." Like the novel it links the improvement of the individual to the improvement of society. The idea that the self is abstract and immaterial (information) is another and ancient literary trope.

Molecular biology requires a different, post-modern set of metaphors. Recognition of contingency and embodiment can mediate between universal and particular. One can imagine a molecular biology that emphasizes difference: partly derived from recognition of genetic polymorphism, differences in the genome between healthy individuals; more importantly derived from description of the genome in action. The order in which genes are turned on and off in interaction with each other and with environmental signals is infinitely variable and non-deterministic. Insistence on environmental interactions is a political necessity to counteract the creeping genetic determinism, the systematizing and essentializing, that threaten our culture's sense of human freedom. There is a eugenic subtext and a commercial payoff to the Human Genome Project that reinforce its normalizing and essentialist tendencies and that require a strong answer.

Molecular biology and literature share such terms as reading and writing, translation and transcription. The genome requires not readout but reading, in its widest hermeneutic and creative sense. A post-modern reading of the genome would emphasize not its hierarchic centrality but its potential for infinite variation in response to circumstance; its dependence on marginal, contingent, and peripheral events. To read the genome properly is to read it as the world (environment) "reads" or plays upon it, with endless potential for individual surprise. Conversely, molecular biology may in return offer literary theory a way to challenge the fiction of the unitary or controlling self, a fiction that is among the most resistant to deconstruction.

Limits of a Genetic Paradigm in Biology and Medicine

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The range of human phenotypes ... diseases, behaviors, tendencies ... for which our burgeoning bio-molecular data base is sufficient to provide understanding, diagnosis, and therapy is small. Only 2 percent of our total disease load is related to genetic causality; if they were cured tomorrow we would remain with 98% of our health problems unaddressed. Biotechnology attempts to meet this problem through analysis of "genetic tendency" perhaps the most oversimplified, abused, and misunderstood of terms in our scientific vocabulary. This paper will provide a critical evaluation of the limits of genetic thinking at all levels of biological organization. Conclusions are (i) biotechnology constructs detailed gene maps of behavioral functions but the logic of behavior is not in the genome and is missing from those maps. Complex disease causality or disease tendency cannot be located by gene mapping technology; (ii) The logic of multigenic phenotype is epigenetic and is located in complex interactive networks of subcellular, cellular, and multicellular entities; (iii) Epigenetic logic may not be approached with the linear methods of molecular genetics; an entirely new (non linear) way of thinking about organismal complexity is required. At the moment some sectors of basic biological research are making fundamental observations supporting these conclusions. These sectors are mostly isolated, poorly supported, and increasingly marginalized. At the same time, mainstream applied biotechnology fails to comprehend the true meaning of complexity and continues to pursue a linear model of the organism. The growing differences between basic and applied science in biology represents a crisis from which we may (i) either begin to recover concepts of organism, constraint, and dependent hierarchical relationship, or (ii) relapse into a blind, random, mechanistic view from which it will become increasingly difficult to extract meaning either of complex phenotypes or of ourselves. The human genome project stands as a model of this present crisis and may be seen to offer a resolution in which the genome is understood as a dependent part of the organism.

NON-DARWINIAN EVOLUTIONARY BIOLOGY

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Darwin's theory of evolution, wedded to population genetics and reduced to molecular biology, has led to a biological notion of the self as biochemically determined by the genetic code in DNA. Except at a very low level of evolutionary change, however, Darwinism is inconsistent with a growing body of scientific evidence, and various alternatives have been proposed to deal with the anomalies. Punctuated equilibria is a response to the fact that Darwin's theory predicts a pattern in the fossil record which is very different from the one we observe. Neutralism and mutationism respond to the fact that Darwin's mechanism has never been observed to produce the sorts of changes necessary for large-scale evolution. Although these alternatives are sometimes dubbed "non-Darwinian," however, they are only minor revisions to the existing gene-centered theory. A much more radical move is gaining favor among the growing number of biologists who are being persuaded by the embryological evidence to go beyond the genetic paradigm entirely. One possible consequence of this move would be a truly non-Darwinian evolution in which organisms control their genes more than they are controlled by them. Another possible consequence would be a less reductionistic view of the self.

Friday, November 3, 10:30-12:00 Noon

A. Reproduction and Gender **Bel-Air Patio**
Dawn Dietrich, chair

- Kristina Busse: "Mothering Medusa: Desiring the Other in Octavia Butler's *Xenogenesis*"
- Leonard R. Koos: "For Medical Use Only? The Rhetoric of Abortion in Turn-of-the-Century France"
- Lili Porten: "A Dream of Parthenogenesis, An Equation of Two Unknowns: The Metaphor of Artistic Parenthood in the Nineteenth Century"
- Susan Squier: "Reproductive Technologies and the New Fetal/Maternal Relation"

B. Science and the Romantic Sensorium **Canyon(HI)**
Carl Stahmer, organizer and chair

- Katharine M. Hawks: "The Separation of the Senses: Visual Technologies and Romantic Poetry"
- Carl Stahmer: "Scientific Humanism: Cognitive Modeling and the Romantic Conception of Human Subjectivity"
- Vince Willoughby: "Romantic Writers and Poetic Automation"

C. Charles Lyell **Pavilion**
Lee Sterrenburg, organizer and chair

- Elizabeth Green: "Visualizing the Interior in Pre-Darwinian Narrative"
- Anka Ryall: "Agents of Change: Charles Lyell, Harriet Martineau and the Niagara Falls"
- Lee Sterrenburg: "Processing Information: Darwin's Galápagos Archipelago Revisited"

D. Diagrams and Discourse: Reading Maps of Knowledge **Summit**
Paul A. Harris, organizer; Stephen J. Weininger, chair

- Paul A. Harris: "Diagrams, Houses and Cities: Between Arche-Text and Architecture"
- Sydney Levy: "Pictorial Knowledge"
- Philip Kuberski: "Hieroglyphics and Cinematics: Before the Beginning and After the End of the Letter"
- Brian Rotman: "Grams, Graphics and Other Thinking Machines"

E. The New Pedagogy **Metro**
Deborah Heath, chair

- Robert Chianese: "Ecological Seeing, the Interdisciplinary Field Trip, and the Engaged Self"
- Laurel Brodsley: "Student Poetry-Video as Tool for Social and Scientific Consciousness"
- Michelle Kendrick: "Playing with Fire!!: Hypertext and the Harlem Renaissance"
- Seymour W. Pustilnik and Phyllis L. Pustilnik: "The Mark Twain Utopia of Non-Euclidean Twin Parallel Worlds"

F. Chaos and Complexity I **Westwood(HI)**
Emily Zants, organizer and chair

- Randy Fertel: "Strange Relation: The Rhetoric of Literary Improvisation/The Rhetoric of Chaos Science"
- Julie C. Hayes: "Chaotic Enlightenment: Automata, Weather Systems, and the Europe-Machine in L. Norfolk's *Lemprière's Dictionary*"
- James Leigh: "Four Figures for the/a Future Reading of *Life a User's Manual*"
- Emily Zants: "Evolution of the French Novel towards Cinema: Riding on the Edge of Chaos"

MOTHERING MEDUSA:

DESIRING THE OTHER IN OCTAVIA BUTLER'S *XENOGENESIS*

(Kristina Busse, Tulane University)

The alien as 'other' is a classical topos of science fiction literature in which a clear distinction between 'us' and 'them' allows for an easy disengagement on the readers' part. Octavia Butler's *Xenogenesis* trilogy, however, undercuts this apparent dichotomy by suggesting a complicity between the human characters and their alien counterparts. This uneasy association, then, is extended to the reader's level, so that Butler forces us to interrogate and respond to her assertions about the human race. While Butler's texts may be read as a defense of biological determinism, I want to suggest a psychoanalytically informed reading which understands biology as a metaphor for social constructions. Such a reading allows us to read the trilogy as a highly intricate insight into the human psyche, an elaborate metaphor for gender construction, othering, and subject formation.

Using a Lacanian framework, this paper explores the economics of desire between humans and Oankali in order to show how their dialectical relation can be 'translated' into interpersonal terms. In such a reading, we can see how Butler's work externalizes the classical human antagonistic strategies of the psyche. Thus, we have to recognize the Oankali as the 'other' within us rather than comfortably displacing them. If we can see the Oankali as our own 'others,' Butler's description of desire and interdependency can be read in terms of identity politics and formation within the human subject itself. Reading Butler's aliens as ultimately inscribed at the very core of our being, I show how the Oankali become idealized figures for the transgressing subject in Butler's symbolic universe. As a result, I demonstrate how Butler's work can be read as postmodern science fiction for its very resistance to being easily placed in any essential categories and for the very contaminated inscription and implication of its view of the human.

Keywords: *Xenogenesis* - Biological Determinism - Psychoanalysis - Feminism

FOR MEDICAL USE ONLY?
THE RHETORIC OF ABORTION IN TURN-OF-THE-CENTURY FRANCE

Leonard R. Koos, Mary Washington College

The turn-of-the-century debate in France over the legalization of abortion practices provides cultural criticism with a rich opportunity to assess the complex and permuting status of the image of the medical in literary, social, and political discursive formations. Although Article 317 of the 1810 Napoleonic Code considered it a criminally punishable offense for practitioner and patient alike, abortion was nonetheless a widespread practice in nineteenth-century France (some contended that there were nearly one million abortions annually by the eve of the First World War). As concern over France's declining birth rate fueled the depopulationist propaganda of the 1890's and the neo-malthusian movement of the next decade, the abortion debate was consistently central to albeit treated differently by each perspective. This paper will trace the social, political, and sexological rhetorical strategies of that debate in the literary texts that it produced, in particular as they relate to preponderant cultural conceptions of the role to be played by medicine and science in modern society. My paper will begin by analyzing the ways by which nineteenth-century medical literature sought to enact a discursive opposition to traditional abortion practices (those performed by midwives, herbalists, pharmacists, and others) in an ongoing rhetoric of legitimation. Secondly, I will analyze the figuration of abortion in the most well known of depopulation novels, Emile Zola's Fécondité (1899). Abortion and abortion practitioners in Zola's novel are discursively excluded from the legitimizing rhetoric of science and refigured according to hyperbolic representational codes of urban decrepitude, sexual perversion, illness, and the sewers. Finally, I will examine the representation of abortion in the neo-malthusian novel (Daniel Riche's Stérile [1898], Michel Corday's Sésame ou la maternité consentie [1903], and Ferdinand Kolney's Le Salon de Madame Truphot [1904]) which, as it aligns itself with working class and feminist concerns, engages the rhetorical authority of medical knowledge as part of a larger program of ameliorating social conditions through scientific and technological control. The study of the rhetoric of abortion in these texts can offer new insights into the cultural perceptions and uses of medicine and medical practices in turn-of-the-century France as well as provide a relevant reference point for contemporary discussions of the same issues.

A Dream of Parthenogenesis, An Equation of Two Unknowns: The Metaphor of Artistic Parenthood in the Nineteenth Century

Lili Porten (Harvard University)

The metaphor of artistic parenthood, wherein the work of art is cast as child with the artist as parent, is among the most familiar of Western culture's models of artistic vocation. Indeed, so familiar is it and so natural-seeming, that literary critics have by and large neglected the metaphor's artifactual status, treating it instead as a timeless cliché, part of a storehouse of figurative expressions available to artists and critics since time immemorial, or at least, since Aristotle. Even those--notably feminist--critics who have most provocatively analyzed the metaphor's cultural presuppositions and implications have nevertheless tended to privilege its constancy at the expense of its historicity. In fact, the metaphor's status in aesthetic discourse underwent a series of dramatic changes between the end of the 17th and the beginning of the 19th century. A purely conventional figure in classical, medieval, and Renaissance texts, the image of the artist as parent acquired pejorative connotations in the eighteenth century, only to be once again redefined as a poetic ideal and embraced by the Romantics.

The historicity of the metaphor of artistic parenthood appears to be a function not only of changing views of artistic production, but also of the historical variability of the metaphor's other term, the process of procreation, which has, historically, been no more "known" or certain than that of artistic creation. Indeed, during the two hundred years following the 1651 publication of William Harvey's uneasily post-Aristotelian Disputations touching the Generation of Animals, biological generation became a subject of lively controversy. Thus, the transvaluation of the metaphor in aesthetic discourse between the mid-17th and early 19th centuries has its counterpart in the fluctuating fortunes of the "frothy white liquid" in the contemporaneous discourse of biological generation.

Literary critics have tended to neglect the vicissitudes of the discourse of generation, treating this variable as a constant and tacitly according an Aristotelian model of generation more monolithic and unremitting authority than it historically enjoyed. In fact, insofar as neither term of the metaphor of artistic parenthood has been stable enough to function as a "proper" point of departure, as "vehicle" for the other's "tenor," the metaphor has effectively constituted an equation of two unknowns. Thus, ironically enough, while theorizations of aesthetic production have turned to the discourse of generation to provide analogical insight into the mystery of artistic creation, theorizations of generation, naturalizing the aesthetic term of the comparison, have invoked the supposedly self-evident nature of artistic creation to substantiate their hypotheses about procreation. Consideration of the historicity of the metaphor of artistic parenthood and the entwined histories of aesthetic and biological models of generation raises thought-provoking questions about the ideological work that metaphor can perform.

The epistemological instability of the metaphor of artistic parenthood only renders more suggestive the persistent historical and rhetorical interdependence of aesthetic and biological conceptions of conception, for this weak link brings into focus the "interdisciplinary" preconceptions and investments, and sexual politics, that seem to have undergirded and overdetermined the metaphoric association of artistic creation and procreation. In particular, two related trends seem to have overdetermined the codevelopment of these discourses of generation: an investment in the possibility of unitary origination, in the possibility of a kind of parthenogenetic production by a single parent; and the elaboration of a separate spheres model of gender roles, coupled with a shift from what Thomas Laqueur has called a one-sex model to a two-sex model of sexual difference, one of whose stakes was the sexuality of authorship.

Reproductive Technologies and the New Fetal/Maternal Relation

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Three tendencies nurtured in the practices of reproductive technology have disturbing implications for us as individuals and as social beings. They are: 1) the increasing subjectification of the fetus (that is, the increasing tendency to posit a fetal subject), 2) the increasing objectification of the gestating woman, leading to her representation as interchangeable object rather than unique subject, and 3) the increasing tendency to conceive of the fetus and the mother as social, medical, and legal antagonists. Looking at a range of texts, from newspaper articles to a 1994 novel, and finally a 1994 government report, I consider how these troubling tendencies in our construction of fetus, mother, and the fetal/maternal relation relate to practices that we now associate with reproductive technology, including visualization technologies.

If we turn to historical and contemporary representations of pregnancy in search of alternative models for conceiving of the fetus, and of what we have called (for want of a better phrase) the fetal/maternal relation, we will find a range of relations from privileging the mother to celebrating the fetus. The work of Barbara Duden on the medical case records of Dr. Johannes Storch in eighteenth century Germany reveals that in that earlier era, when ambiguity was an accepted part of pregnancy, the experience and testimony of the pregnant woman served as a crucial guide through that complex territory. With the increasing proliferation of reproductive technology, however, a shift has occurred in the site of medically and socially privileged subjectivity. As the new reproductive technologies increasingly authorize a notion of the fetal subject, there is a simultaneous de-authorization or effacement of the maternal subject. In short, as the fetus becomes a self, the mother increasingly is becoming something less than a self. She is reduced to an obstacle to fetal health, an antagonist, an object.

A contemporary novel--Pascal Bruckner's 1994 The Divine Child--articulates the implications of this shift, and suggests the limits of this new process of fetal subjectification. Bruckner's novel images the new fetal subject with such apocalyptic excess that it elicits in its readers a reaffirmation of the maternal subject position. I close by contrasting Bruckner's critique of fetal subjectification to the new construction of the fetal subject articulated implicitly by the National Institutes of Health Final Report of the Human Embryo Research Panel, published in September 1994.

The Separation of the Senses: Visual Technologies and Romantic Poetry

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This paper focuses on the treatment of 19th Century technologies which, as Benjamin describes, "subjected the human sensorium to a complex kind of training," in Romantic poetry. Special attention will be paid to visual technologies and modes of exhibition, such as the panorama, the phantasmagoria, and the magic lantern show. This paper will examine the way a poetic discourse of a fragmented sensorium resonated with concomitant discourses in both aesthetic philosophy and physiology, especially neurology.

At the beginning of the 19th Century, Cartesian Enlightenment models of the viewing subject were being gradually eroded by formulations of a seeing subject which was deeply embedded in new discoveries of the field of physiology and neurology. What resulted was a perceiver who, by the sheer arbitrariness of his or her body, could destabalize any number of previously fixed identities. The profoundly influential scientific work of Maine de Biran, Helmholtz, Muller and Goethe will be discussed.

This arbitrariness that new scientific discourses articulated created anxieties about stability, truth and power relations between viewer and object. Theories of the "sublime" address these anxieties directly, by theorizing precisely this instability in the viewer in terms that are profoundly ahistoric and hostile toward technology. It is interesting that the "sublime" is most often encountered in representational form -- either in poetry, panoramas, or small-scale miniatures of Mont Blanc in English rock gardens.

At many levels, Romanticism can be seen as a struggle against the kind of fragmentation that discoveries in neurology made possible. The imagined cohesion between the eye and the "natural" order was violently disrupted by a science which articulated the fallibility of the eye. When Wordsworth, in a somewhat surprising moment, rails against "the eye--the most despotic of senses" we sense a certain impotence in the subject who is made vulnerable to his own body.

SCIENTIFIC HUMANISM: COGNITIVE MODELING AND THE ROMANTIC CONCEPTION OF HUMAN SUBJECTIVITY

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Those who have argued that such a thing as "Romanticism" exists or existed as a coherent cultural phenomenon are in almost unanimous agreement that the focal point of this phenomenon, that common thread which binds its disparate forms, geographies and temporalities, is its rejection of the rationalization and concomitant mechanization of society. According to Rene Wellek, for example, all romantic poets "share a common objection to the mechanistic universe of the eighteenth century. All conceived of nature as an organic whole, on the analogue of man rather than a concourse of atoms — a nature that is not divided from aesthetic values, which are just as real (or rather more real) than the abstractions of science." Several assumptions which underlie our current conception of Romanticism are made explicit in this statement: First, that the Romantic movement is marked by a belief in the human subject as opposed to the material world as the proper locus of knowledge of and about the universe; second, that the subject itself is an 'organic' subject which exists in a state opposed to the 'atomized' material world; and third, that aesthetic production and inquiry is the only means of understanding the nature of this subject.

That Romantic poets seem disheartened by or at the very least suspect of the rapid mechanization of society in the eighteenth and early nineteenth centuries is hardly contestable. That they likewise believed that it was into the depths of the human subject that our intellectual inquiries into the nature of the cosmos should be directed and that it was through the aesthetic that such inquiries could be conducted is similarly convincing. But the argument that there was in fact some common conception of the constitutive nature of subjectivity as one of 'organic' unity as opposed to 'atomic' interaction amongst even the most canonical of the Romantic poets is far less convincing. The late eighteenth century marks the birth of modern Cognitive Psychology. While many earlier thinkers had theorized about the constitutive nature of the human psyche, it was not until the late eighteenth and early nineteenth centuries that philosophers and scientists alike began to take seriously the notion that one could model the intricate and complex inner workings of the human mind: That one could model consciousness. These early cognitive models are most strikingly marked by their attempts to explain consciousness as a part of, rather than as seperate from, the material world. Taking Percy Shelley's Defence of Poetry and Samuel Taylor Coleridge's Biographia Literaria as models, this paper examines how Romantic conceptions of human subjectivity were to varrying degrees informed by contemporary attempts at cognitive modeling and scientific method. It seeks to show: First, that there is a great deal of variance in the acceptance/rejection of scientific theories of consciousness amonst Romantic poets and subsequently in Romanitic conceptions of 'organic' subjectivity, arguing that, far from positing the human subject as existing in opposition to the principles which order the material world, many of the Romantic poets constructed their humanism around a subject which they conceived of in terms which were explicitly scientific and technological; and second, that even those poets who most stridently rejected the scientific thinking of their day could not escape its influence. Lastly, the paper discusses how we must rethink the birth and popularization of the Science/Humanities binary in the Romantic and Victorian eras in the face of a Romantic impulse which existed not in opposition to but in conjunction with the scientific paradigms of its day.

ROMANTIC WRITERS AND POETIC AUTOMATION

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Definitions of romanticism have commonly contrasted the Enlightenment's scientific models of understanding with a romantic escape to nature and the imagination. Carl Woodring's account in Politics in English Romantic Poetry is typical: "beginning in revolt against the concept of reality as a mechanistic arrangement of matter perceptible to the understanding, with the understanding aided only by the physical senses, romanticism moves to a positive belief in an organic universe perceptible to the imagination."

I argue that such models of mechanistic arrangement were not exterminated by English writers of the romantic period, but found their way into their theory and practice. Using Manuel de Landa's War in the Age of Intelligent Machines to provide examples of how diverse societal effects of technological advances may be traced beyond their initial implications, I examine romantic texts in order to delineate romantic writers' representations of the poet as a poetry-producing machine. In Wordsworth's "Preface" to Lyrical Ballads, for example, the poet is figured as being able to hone his skills at converting emotion to poetry by practicing a type of mental drill comparable to the military drills of the "clockwork armies" de Landa describes. Similarly, Coleridge's "Kubla Khan" describes and then reveals the automatic productions of a poetic mind.

I thus aim to revise, or at least complicate, the traditional understanding of romanticism's relation to technology.

Visualizing the Interior in Pre-Darwinian Narrative

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Controversy has been a predominant theme in histories of evolution and geology-—for historians of evolution, the conflict between materialism and vitalism, and for historians of geology, that between gradualism and catastrophism, have been key to understanding nineteenth-century discourse.

In this paper, I suggest that a more pervasive conflict underlies both evolutionary and geological discussion in the early-nineteenth century (i.e., before 1859). That deeper conflict lies between interior and exterior, and manifests itself in a number of ways: depending on individual socio-scientific interests, a nineteenth-century naturalist usually focused on the interior *or* the exterior of the earth, of organisms, of a continent in the "New World."

In his recent *Politics of Evolution*, Adrian Desmond argues that the political / scientific insider Richard Owen spent most of his career warding off Dissenters like Robert Grant, who (from outside the establishment) wanted to reform the medical profession. In part of my paper, I expand this thesis to show that Owen's treatment of the organism itself reflects this insider's perspective. As an anatomist, Owen focused on the *interior* of the organism, and distrusted sweeping (*exterior*) arguments from biogeography. His political commitments to neo-Platonic forms in science and a rigid class structure in human society made Owen a staunch opposer of evolutionism.

I extend this argument to Charles Lyell and Alexander von Humboldt. Humboldt successfully described the geographic interior of South America, although some of his claims were speculative. Despite a neo-Baconian distrust of speculation in the scientific community, however, Humboldt's travel narratives were wildly popular in Britain.

Lyell, on the other hand, who styled his narrative after Humboldt's, was not so fortunate at first. His speculative journeys to the earth's interior in his *Principles of Geology*, along with his theoretical commitments to radical uniformity, were unpopular among most English geologists in the early part of the century. I argue that since Lyell made claims about interiors that could never be seen (earth's core, ocean floor), his speculations were not acceptable where Humboldt's were (since that narrative in principle *could* be checked by going to a continent's geographic interior).

To tie Lyell and Humboldt back to Owen, I then argue that in Lyell's case, his science mirrors his political situation. Though Lyell was a member of the prestigious Geological Society, Martin Rudwick has shown that his views put him on the *exterior* of the society's core membership. His attempts to make himself an insider (both in the Geological Society, and in the earth) are parallel political moves.

AGENTS OF CHANGE:
CHARLES LYELL, HARRIET MARTINEAU AND THE NIAGARA FALLS

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In June 1836, close to the end of her two-year journey in the United States, Harriet Martineau visited the famous Niagara Falls for the second time. The high point of this visit, she tells us in *Retrospect of Western Travel* (1838), was her participation in the tourist ritual of going behind the falls. There, creeping along a narrow wet ledge and over heaps of broken slippery rocks with the "watery curtain" before her, she was actually inside one of the most sublime natural phonomena in the New World and duly impressed by its powers: "A hurricane blows up from the caldron; a deluge drives at you from all parts; and the noise of both wind and waters, reverberated from the cavern, is inconceivable." This experience is also invoked in Martineau's sociological *Society in America* (1837), where a dramatic description of "the thunder cavern" behind the falls serves to introduce the long middle section dealing with the economic development of the young nation. Outside of the context of a personal narrative, her emphasis is less on her exhilaration than on the action of the water, one of the "blind and dumb agents" that keep the natural world in a constant state of change. In this view, even a national icon like Niagara "is but one of the shifting scenes of life, like all of the outward that we hold most permanent."

Martineau's temporal image of Niagara is obviously inspired by her reading of Charles Lyell's *Principles of Geology* (1830-33). It echoes Lyell's classification of water as one of the two "great agents of change in the inorganic world" as well as his use of Niagara Falls as "a magnificent example" of how running water transforms the landscape over time. Since the description of Niagara in *Society in America* is followed by a series of seemingly disparate sketches of individual Americans representing various stages of civilisation, Martineau invites her readers to see these characters and their labours in terms of a Lyellian conceptual framework. Without any overall plan, their collective efforts will gradually and slowly transform the continent, and this will happen with the same sublime inevitability as Niagara's erosion of the rocks on which she herself has stood. Thus geology naturalizes the expansion of a capitalist economy in the New World. By linking aqueous and human agents Martineau also endows her observations of domestic life with the status of a scientific practice. Moreover, she suggests that scientific observers of society, like geologists, must base their analyses on an endeavour to imagine the eventual magnitude of the kind of changes they are able to register only piecemeal. In Lyell's words, they are required to "invent means for overcoming the limited range of [their] vision."

My paper uses Martineau's account(s) of Niagara Falls as the locus for an exploration of the relationship between aesthetic, socio-economic and geological discourses in *Society in America*.

Processing Information:
Darwin's Galápagos Archipelago Revisited

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Frank Sulloway has convincingly argued that Charles Darwin did not have a Eureka experience on the Galápagos in September and October of 1835 ("Darwin and His Finches: The Evolution of a Legend," 1982). Darwin did not see evolution in action. Darwin in 1835 did not have a cognitive frame that would allow him to process what he saw on the Archipelago as evolutionary information. However, Darwin did have two things he could use. First, he had a Lyellian apparatus for making sense of human colonial impacts on tropical islands. This apparatus included provisions for explaining with the extinction of endemic species. This Lyellian apparatus figures prominently in the *Beagle Diary* entries on the Archipelago. Second, Darwin could borrow from and invert John Milton's *Paradise Lost*, his favorite reading on the *Beagle* expedition. Standing the convention of paradisal islands on its head, Darwin recast the Galápagos Archipelago as an island hell in a manner that anticipated Herman Melville's *The Encantatas*. Darwin says in his *Diary*: "These islands seem to be paradises for the whole family of Reptiles." Comparing the eating and foraging habits of land and marine iguanas, he writes: "Their cogeners the 'imps of darkness' in like manner live entirely on sea weed--I suspect such habits are nearly unique in the Saurian race." The question of how animals process information about food resurfaces in the case of colonial humans, who exchange and process information about eating tortoises, iguanas, doves, and other resident species of the Galápagos. In order to rethink the Galápagos species as evidences for evolution, Darwin had to move from information about food and eating to more genealogical kinds information, which suggest how animals might have come to eat the things they presently do. The back-and-forth tension between food information and evolutionary information remains in operation today. The recent armed occupation of the Charles Darwin Research and the opening of the Galápagos Archipelago to massive Sea Cucumber harvesting suggest that we are still eating the evolutionary information.

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DIAGRAMS, HOUSES AND CITES: BETWEEN ARCHE-TEXT AND ARCHITECTURE

This paper will present some diagrams used by a writer and an architect, and show how in each case the materiality of diagrams is integral in the realization of a form. Italo Calvino's novel Invisible Cities is plotted according to a precise formal schema, that one may render in different diagrammatic forms. The diagrams one may produce in turn generate a different sense of the text--the ways in which it could in principle continue on producing more "invisible cities." And then, because of the minimal, elegant descriptive style, one may render the cities in diagrammatic form. The text thus carries with it an implicit architecture, one which maps out the terrain of its form in a way that exceeds the "Empire" of Khan that is depicted in the book.

Peter Eisenman's book Houses of Cards will provide my other text for analysis. Eisenman uses iterations of models to project and diagram his houses--the house for him is the realization of an idea from an original diagram. His texts about houses are then implicit programs to build his subsequent house, so that a recursive relation develops between diagrams, texts, and buildings.

I will use these two thinkers to theorize the role of diagrams as a form of inscription in which a space opens up between the textual and the material, between conception and perception. The visual map becomes a new form of embodied knowledge.

PICTORIAL KNOWLEDGE

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"A picture is worth a thousand words." Or so goes the saying. And as a saying, it undoubtedly doesn't say much. Still, assuming that it is about the amount of knowledge gained by looking at a picture, it refers first to the information gathered by an observer--what we say the picture depicts: a sunny or cloudy day, a sky, a mountain or a river, a woman, a man or a child, and if an abstract painting, shapes and colors, not to mention the various combinations, positions, and relationships of all identifiable elements. This kind of knowledge, which we may call knowledge-as-information could be simple or extremely complex. It is in any case sayable. It is equivalent to an observer's discourse on that picture, his or her description.

But a picture is worth more than words in a different sense. Impressions, visual experiences impart also a knowledge not easily quantifiable because it is qualitatively different from the kind we call "information" or "content." The essay attempts to describe some of the characteristics of that knowledge as the French poet Francis Ponge, who was often not shy to use scientific references and metaphors, has posited and intuited them. That knowledge, which he calls "nioque" (a phonetic transcription of "gnoque", a neologism coined from the Greek word for knowledge), speaks to and is contained in the body since its result is a physical or emotive reaction (embodied knowledge); it marshalls a means of knowledge which does not distinguish between the object and the means of knowledge (what has been called "enacted" knowledge); it is also statistically distributed in that there are no identifiable elements in the object that impart it, rather it is the addition, connection and compactedness by the observer of numerous little "infra-significations" in the object that do; and finally, it is generative in that its apprehension takes place in a becoming: from meaninglessness to meaning, from infra-signification to signification, from pre-verbal to verbal, from distribution to compactedness, from the body to the the intellect, in sum, from "nioque" to knowledge-as-information. It is a becoming which gives the observer for a very brief and quite rare moment the experience of the pure flow of time.

HIEROGLYPHICS AND CINEMATICS: BEFORE THE BEGINNING AND AFTER THE END OF THE LETTER

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One of the fascinating and perhaps unexpected consequences of postmodern technology is the way in which the liberationist ideologies of modernism, so deeply associated with alphabetism, logic, and literacy, have given way to a general aesthetics of immediacy, of the living picture, and the elctronic simulation of presence. It is interesting to see how the reflective, belated, ruminative aspect of alphabetic culture, associated since Milton and Mill with the deliberative nature of liberal culture, has been radically reconfigured within the media of television and cinema, whose simulations of image and voice seek to undermine the reflective labors of reading, interpretation, and logcial reduction — in short the space of comprehension. What is lost and what is gained in this movement towards the simluation of presence, cinematics, tapebooks, television "essays"? How deeply involved is "logic" with the "logos"? It is possible that the allure of cinematic simulation and the mystique of the hieroglyph bespeak two modes of the diagrammatic imagination. How should we address ourselves to this revolution happening all around the library?

Ecological Seeing, the Experiential Field Trip, and the Engaged Self

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Failures to acknowledge and reflect on the interactive character of life's complex systems begin with failures of seeing. An interdisciplinary approach to viewing the natural world can bring the habits of ecologically-minded artists, poets, writers and naturalists to the study of the environment in order to sense, respond to and discern the connections between its various components. Our own self becomes necessarily involved and changed in this kind of vision, which transcends both subjective and objective polarities, so that attention to the place and influence of the perceiver in the scene becomes a central concern. The paper offers a developmental guide to learning how to see ecologically, examines the inevitable emergence of the viewer's self-consciousness in practicing inter-relational vision, and traces representations of the self engaged in such seeing in selected poets and writers.

Inter-relational or ecological seeing suggests a new type of field experience, one for science and non-science participants alike. It involves such practices as : 1) attuning one's senses to the specifics of place; 2) parts and wholes seeing, as in gestalt comprehension; 3) "participatory" seeing, borrowed from art, where one actually tries to lose awareness of the self and allow the scene to "impose" its forms; and 4) ecological seeing, the discovery of the patterns of ordered complexity in nature, with the phenomenon of self- awareness and self-reflection that attends it.

Accounts of such connected seeing form the core of writings by such contemporary authors as Barry Lopez, A. R. Ammons, Wallace Stegner, Gary Snyder, Annie Dillard and others, each one striving to find a language appropriate to represent his or her engaged, influenced and influencing self. Depictions of the self in such writers prompt reflections about our relationships to the world and others: ecological seeing becomes a source of philosophical insight and self-knowledge.

STUDENT POETRY-VIDEO AS TOOL FOR SOCIAL AND SCIENTIFIC CONSCIOUSNESS

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Throughout Southern California, students are learning to make videos in the classroom. Pacoima Middle School, with its professional studio run by James Gleason, welcomes volunteers to help students develop prize-winning videos.

As a former UCLA English teacher, I had been especially interested in the use of video and computer graphics to illustrate themes in William Blake's poetry. Mr. Gleason assigned four students to work with me on a project: I would produce and direct a video based on Blake's poem, "London" and translate his vision of inner city anguish into images from neighborhoods in Los Angeles.

The 9th graders who worked with me first studied the poem and made lists of the kinds of images they would want to use for their video, based on their identification of moral, social, and medical turmoil in the community. Using camcorders, and the help of Mr Gleason and myself, the students literally wandered the streets of L.A. filming the homeless, addicts, churches, babies in an intensive care unit, AIDS, polluted rivers, police arrests, and other themes evoked by Blake.

This method for teaching social and scientific consciousness by using poetry and art is extremely effective. By encouraging students to have a hands-on approach, they gain a visceral as well as cognitive understanding of urban issues. When they visited a neonatal intensive care unit, the hospital staff educated the students about drug babies. When they visited churches, ministers discussed how churches respond to social ills. When the students recorded the lives of homeless people, they saw how these people's lives, minds, and bodies were ravished by their life-style. Using their own imagination, the students staged dangerous and illegal situations like drug busts. Through this experience, the students gained skills in video production at all levels, thereby introducing them to this important new technology.

During this presentation, I would show the award-winning 4 minute video, "Blake's London/L.A.," describe how the students gained knowledge about urban tragedies as they made the video, and how this technique can be used in any classroom, at any level, using any kind of visual media.

Since the conference will be held in Los Angeles, one or two of the students might be able to come and briefly talk about their experiences during or after the session.

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Technology, Hypertext and Literary History

Robert Romanyshyn begins his study of technology with this caveat, "Technology" he writes,

> is a crisis of the imagination. As such, [it} is both a danger and an opportunity ... It is a danger in so far as it can be the death of the imagination through its literalization. It is an opportunity in so far as it can be an awakening to how the events of the world have an imaginal depth, and how the life of imagination inscribes itself within the events of the world.

Romanyshyn is speaking of technology in general --technology with a capital T-- but his words seem particularly relevant in relation to my project to produce a CD ROM on the Harlem Renaissance, a CD with an expressly educational purpose. The attempt to create a CD Rom, hypermedia, history of a crucial time and place in African American, and American history is susceptible to just the "crisis" that Romanyshyn describes. How does an "author" (one not African-American, to complicate matters) select and assemble such a history? How does such a project maintain "imaginal depth" and avoid, in Romanyshyn's words "reducing all depths to a visible surface?" Even if one can somehow avoid reducing a complex history to a superficial set of images and texts, how can one use this "history" effectively in a classroom?

In this paper, I suggest that hypermedia can be a useful addition to the classroom precisely by resisting the tendencies to reduce hypermedia projects to their technological components, to specialized languages of assembly or romanticized views of the technology as a revolutionary breakthrough in human consciousness. Both steps in the process of creating and teaching with hypermedia require close scrutiny and careful "theorizing" the effects of hypermedia on historical narratives, on problems of race, gender, and the experience of embodiment. In this respect, to assemble and use such a history one must analyze carefully the rhetoric and technology of hypermedia both to reveal about it what is most revolutionary and what it tends to erase, obscure or marginalize .

The Mark Twain Utopia of Non-Euclidean Twin Parallel Worlds

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Born a midwesterner in the little town of Florida, Missouri, in 1836, Samuel Langhorne Clemens, also known as Mark Twain and Thomas Jefferson Snodgrass, is seen here as a utopian Missourian who created his own utopia of twin American parallel worlds: the world of adolescence, that of the steamboat; and the world of maturity, that of the railroad. Getting these parallel worlds to join in non-Euclidean togetherness was his ideal, and it is the topic of this paper in which the emphasis will be on *Pudd'nhead Wilson*, with allusions made to several other major Twain works.

Twain could strive for his utopian togetherness because words were his utopia and he could make utopian worlds out of them for others as well. As one critic put it, he "could rock the room for an hour while talking nothing except sense, and would have staved off Arsenio Hall without needing a saxophone."[1]

Twain had the movement to do this striving. As a migrant within America, he traveled to the West, creating movement that was not just for himself but for the things that interested him: the news which he reported; the riverboat on the Mississippi which he piloted; and the water-measuring words which he heard and transformed into an author's name for himself, "Mark Twain," or "two fathoms deep," seen here also as "mark these two parallel worlds."

Opposing the utopian merging of Twain's two worlds was a complex third world of human-created obstacles, vividly made evident in the works which resulted from Twain's travels. This third world, even today, has prevented the non-Euclidean parallel lines, or worlds, from meeting by creating a Euclidean geometry to keep the two worlds apart. Also, and with quite dismal practical results, it has prevented equals from being added to equals giving equals (the Addition Property for Equality), in the relating of human beings to one another.

This opposing third world will be emphasized in this paper, with charts and diagrams to illustrate the intricacy of the third world's meanings and directions and to focus on Twain's attempts to identify this third world and make the equalization process succeed.

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[1] Clive James, "The Voice of America," *The New Yorker*, 14 June 1993: 80.

STRANGE RELATION: THE RHETORIC OF LITERARY IMPROVISATION/THE RHETORIC OF CHAOS SCIENCE

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Now that science is looking, chaos seems to be everywhere.
James Gleick, Chaos: Making a New Science.

The rhetorical conventions of dynamic systems science (hereafter chaos science) bear a striking resemblance to the conventions of literary improvisation, a coherent aesthetic heretofore undefined. Defined first by their insistence upon spontaneous creation, improvisations embody a mimesis of incarnate freedom using a number of persistent conventions: a somehow foolish, marginal persona; a style apparently free-associative, formless or fragmented, uncanonical, digressive, and replete with catalogues or enumerations. Claims of spontaneity often embed questions about the nature of reason, order, freedom, and truth, which these conventions synergistic underscore. Where such a synergy exists we enter the world of improvisation.

The way chaos science presents itself is the first indication that an aesthetics of improvisation is at work. Mandelbrot's quirky and iconoclastic first-person voice, so offensive to mainstream scientists, unwittingly looks toward the foolish persona of the improvisatory aesthetic. His persona helps to debunk the scientific method that misses life's complexity and to promote instead his deep program: an openness to the non-linear aspects of nature. Characteristically, Mandelbrot's eschews the "textbook in mathematics" form and characterizes The Fractal Geometry of Nature instead as a "casebook, a compilation, [and] a scientific Essay . . . written from a personal point of view. Also . . . it tends to digressions and interruptions." To say the least! Mandelbrot exemplifies improvisation in his marginal persona, encyclopedic tendency, digressions, and swerve from traditional form.

Chaos scientists pose questions, furthermore, identical to those improvisations ask: does the measuring device of rationality answer the thing measured? will rationality miss nothing of life's profusion? is it enough only to measure the predetermined? what about all the random aspects of life, those things which only my im-pro-vis-ation, my art-or science-of the un-fore-seen, can capture? Improvisation represents an archetypal locus of consciousness, an immutable structure of thought, which takes this form and expression whenever an artist-or scientist-finds himself in that locus or mental place. What mental place? Improvisation is preeminently the aesthetic of paradigm shifts when a culture questions reason's limits and, through such questioning, redefines and expands reason's scope. Appearing throughout literary history, improvisations proliferate during periods of social and intellectual upheaval: classical Greece, the Renaissance, the Industrial Revolution (early and late), and the 20th century. In an important sense however the issue of reason is just the programmatic tip of the iceberg. At its heart, the literature of apparent chaos, shares with chaos science not only the effort to violate and extend boundaries and redefine reason, but also a desire to explore the fecund borderline between the deterministic and free. Beneath the issue of reason's use lie questions about what we use reason on and for, that is, to understand and to appreciate the fundamental polarities of our being: freedom and necessity, chaos and order, the impulses to incorporate and to exclude.

Chaos science's inclusive relation to life as we experience it is a significant rhetorical feature of its revolution. The last of the 20th century's dismantlers of Newtonian physics (after relativity and quantum mechanics), chaos science is the only one of that group that "applies to the universe we see and touch" (Gleick) and to make us feel At Home in the Universe, as Stuart Kauffman's recent title tellingly suggests. Thus, both the science and the literature of chaos are great levelers, debunking received truths, received ways of expressions, and received hierarchies. Like chaos science, improvisations would have us see more of life, not only what Reason can see, but what comes to us through the visionary, the unconscious, or the intuitive. Their ultimate theme is the admonishment to embrace more of life. Terence's adage (enlarged) could serve as motto for both the literature and the science of chaos: "nothing human (or in nature, adds chaos science) is foreign to me." The "One Life" is after all, as Coleridge posited, "within us and abroad."

Chaotic Enlightenment:
Automata, Weather Systems, and the Europe-Machine in L. Norfolk's Lemprière's Dictionary

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The twentieth-century debate over the meaning, function, and ideological significance of "rationality" has fueled a series of reinterpretations of the eighteenth-century Enlightenment in philosophy, literary criticism, the history of science, and, quite recently, fiction. Patrick Süskind's Das Parfum (1985) and Susan Sontag's The Volcano Lover (1992) explore the violence and surreptitious desiring investments in the encyclopedic enterprise, paralleling such analyses as Horkheimer and Adorno's Dialektik der Aufklärung or Pierre Saint-Amand's recent Les Lois de l'hostilité. Lawrence Norfolk's Lemprière's Dictionary (1991) is another "interpretive fiction" of the period, involving the historical figures of John Lemprière, classics scholar, and Jacques de Vaucanson, the celebrated builder of automata, in a somber fantasy that links covert activities of the East India Company, the siege of La Rochelle, the financing of the French Revolution, and... weather. Norfolk take up the eighteenth-century's fascination with human-machines and automata in both materialist philosophy and popular culture, and infuses it with a late twentieth-century reconsiderations of the "human." The novel is also a meditation on complexity, whether figured in the cityscapes of London and Paris, weather and oceanic patterns, or the self-consciously labyrinthine plot. Norfolk overwrites Enlightenment causality and order by emphasizing contingency and self-organization; he both juxtaposes and conflates rationalism and mythology. In my talk, I will examine both Norfolk's experimentation with ways of inscribing the functions of chaotic systems and communication networks within his novel, and how his "postmodern" writing may be seen as engaging in an interpretation or translation of a side of "Enlightenment rationality" often neglected in contemporary theoretical accounts.

(abstract)

Four figures for the/a future reading of *Life A User's Manual*

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In a discussion of *Madame Bovary* delivered in Florence in 1978, Italo Calvino used an illustrative figure in which GF, author of his own Complete Works, projects an image of a GF, author of *Madame Bovary*, who projects an image of Emma Bovary, who in turn project an image of the EB she would like to be. Furthermore, each element reflects back on the others, and they mutually transform and condition one another. By replacing the elements, the same figure can be used to describe the relationship between Georges Perec and the characters in *Life a User's Manual*. The problem, however, is that such a figure necessarily leaves out more than it includes.

Analyzing *The Temptation of St. Antoine*, Michel Foucault uses a figure that presents Flaubert's text as an interaction between reader and spectacle, a model based on exchange and projection. This too, can be compared to *Life a User's Manual*, but once again, it requires the exclusion of many elements. In particular, it cannot integrate the mathematical formulae at the root of Perec's work.

The Koch Curve as a third figure offers numerous analytical possibilities. In particular, its yielding of an infinite line in a finite space and implicit call for a rethinking of the notions of scale and perspective seem especially relevant to a discussion of *Life a User's Manual*. In particular, it helps to understand that the previous figures failed primarily because they attempted to represent a non-linear system in linear terms.

The Mandelbrodt Set as fourth figure presents even more possibilities, especially in our appreciation of the relationship between Author and Text. If *Life a User's Manual* is *analogous* (in the biological sense) to the Mandelbrodt Set, the text can be seen as a system of dissipative structures. Furthermore, it provides ways of increasing our awareness of the relationships between reader, writer and text.

EVOLUTION OF THE FRENCH NOVEL TOWARDS CINEMA: RIDING ON THE EDGE OF CHAOS

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The theories of complex dynamic systems have opened up a whole new perspective for reconsidering literary history itself. This study takes a new view of the history of the French novel in general, namely, that the evolution of the novel has been towards film. In its attempt to break away from the frozen forms of hierarchical thought inherent in the Monarchy, to engender a new order of thought, novels have developed techniques and structures that are more cinematic than literary because film can easily juxtapose images and words whereas the novel is condemned to the linearity of words. Though the evolution is probably valid for any national literature, the theory must be based on particulars. Evolution being highly dependent on the historical, social and cultural context, the French novel is a particularly appropriate starting place, since the French cinema, second only to Hollywood generally, is probably foremost in new forms of cinema, thereby providing more apt examples of cinematic adaptations that might have been found for another national literature.

The new political orders that have been tried since the French Revolution have always been the same hierarchical power structure found in the Monarchy, only values were relative instead of absolute. Each novelist plucks away at this structure, first simply to destroy it, and later suggesting other forms of order by the very form of the novel itself. To summarize: Diderot's The Nun decried the isolation of individuals in monastic life because it deprived man of the feedback any organism needs to survive. Laclos demonstrates the weakness of self-identity founded on ones personal ability to manipulate others, for such manipulation is inevitably sensitive to initial conditions, above all, human emotions. The perpendicular structure of Stendhal's novels, introducing simultaneity of events, as well as his irony regarding Julien Sorel's social climbing stand as a critic of the hierarchical power structure. Flaubert, by the way he juxtaposes scenes, words, points of view, etc., predicates a leveling of the hierarchical order, all of which appear the same in Flaubert's works. His agricultural fair scene is eminently cinematic. Zola's power of description reveals the force of a mob as having self-ordering principles impossible to prescribe by law. Proust teaches the reader ways to discover his own strange attractor, toppling all the hierarchical power structures along the way. Bernanos, having a truly great director as the adapter of his films, succeeds in suspending the reader's judgment in cinematic ways so that the reader may find a new order. Finally, Duras looks to sensory memories, as did Proust, for the source of order, to memories that are part of a cultural complex where isolation between different peaks in the cultural landscapes is seen as a major obstacle to achieving optimum performance. Her juxtapositions in the novel were destroyed by the linear film adaptation of The Lover which reinstated the familiar Newtonian world and hierarchical power structure, failing to communicate the ability of a physical passion to bridge the gap between the high mountain peaks of the different cultural landscapes. Film, too, is subject to the frozen forms of social thought; at least the medium has a greater potential for escaping them than does literature.

For this new perspective, I am particularly indebted to The Origins of Order: Self- Organization and Selection in Evolution (1993), by Stuart Kauffman.

Friday, November 3, 1:00-2:30 PM

A. Theory **Canyon(HI)**

Lucia Palmer, chair

- W. John Coletta: "The Food Chain of Signification: Postmodern Evolutionary Ecology and the Question of Interdisciplinarity"
- Helen Denham: "The Frankfurt School and a Dialectics of Nature"
- Samantha Fenno: "Changing the Object: (Post)Structuralism, Scientism and Disciplinary Validation"
- Michael Witmore: "The Trope of Accidental Discovery in Francis Bacon's *Great Instauration and New Organon*"

B. The Cultures of Thermodynamics **Summit**

Bruce Clarke, organizer and chair

- Bruce Clarke: "The Selected Poetic Works of James Clerk Maxwell"
- John G. Hatch: "Images of the Evolution of the Universe: Thermodynamics in the Art of Kazimir Malevich"
- Stephen J. Weininger: "Sooner Silence Than Confusion: Entropy and Early 20th-Century Chemistry"
- Martin Rosenberg: "Complicity and the Counter-Culture of Thermodynamics: Oswald Spengler and Thomas Pynchon"

C. AIDS in Nonfiction and Film **Metro**

Janet Bell Garber, chair

- Carol Colatrella: "The Other as Savior: Race and AIDS in *Lorenzo's Oil*"
- James W. Jones: "Brother, Lover, Patient, Friend: Gay Men with AIDS in Non-Fiction by Care Givers"
- Deborah Lovely: "The Novel is the Most Subversive Form: Leprosy as AIDS in *Time to Kill*"
- Carol Reeves: "French vs. American: Contrastive Rhetorics of Science in the AIDS Virus Hunt"

D. Singing in the Brain and the Body Electric **Bel-Air Patio**

Paul Harris, organizer and chair

- Richard Doyle: "Cryonics and the Promised Body"
- Alan E. Rapp: "Forgoing Friction: Digital Words and the New Entropy"
- Vivian Sobchak: "Beating the Meat: Baudrillard's Body"

E. Science & Faith **Pavilion**

Susan A. Hagedorn, chair

- Thomas L. Cooksey: "*A Voyage to the World of Cartesius*: Descartes, Science, and Censorship"
- Stuart Peterfreund: "Bacon's Puritan Epistemology, the Crisis of Representation, and the Way of Natural Theology
- Dale J. Pratt: "Science, Faith and Reference: Cajal's *Cuentos de vacaciones* and Palacio Valdés's *La fe*"
- Dennis Costa: "Providence, Newtonism and Appropriate Technology in Christopher Smart"

The Food Chain of Signification: Postmodern Evolutionary Ecology and the Question of Interdisciplinarity

W. John Coletta
University of Wisconsin-Stevens Point

Recently, the tenets of deconstruction and postmodernism (postist culture generally) have been challenged by authors who combine literary theory with evolutionary theory, evolutionary epistemology, chaos theory, and general system theory in an attempt "to reaffirm such battered concepts as universality, identity, meaning, truth, and beauty" (Argyros 7). Instead of offering a challenge to postmodern premises, however, I seek to show the mutually sustaining relationship that exists between deconstruction, postmodernism, and evolutionary ecology in what I call "postmodern ecology."

The recent and (for some) alarming failure of representational models in ecological science (see R.H. Peters' *A Critique for Ecology* 1991) certainly makes Rorty's dismantling of the notion of knowledge as representation prophetic (*Philosophy and the Mirror of the World* 1979). For Peters, "Statistical models are faster, cheaper, simpler and better predictors than their representational competitors." "Ecological modeling," continues Peters, "misled us into thinking that we could avoid [the "hard question" of "how much we should simplify and how much we should abstract"] by building a model of reality, which would handle all the questions we might have." Peters' call for predictive models in ecology that have no pretensions to representational realism sounds a lot like Peirce's pragmatism and Rorty's "pragmatist conception of knowledge which eliminates the Greek contrast between . . . representing the world and coping with it." The future of ecological science in the context of Peirce, pragmatism, Rorty, and deconstruction will be explored through an examination of a few ecological models and texts.

Using these models and texts, I also attempt to reconcile 1) *arbitrary reference* (unmotivated linkage between sign and object) with ecological ground (motivated linkage between sign and object), 2) *invention* (J. Hillis Miller's "creative, inaugurating, constitutive" function of language) with *discovery* (the basis for what Ruth Garrett Millikan calls the "proper function" of linguistic forms), and 3) Derridean *open-endedness and deferment* with *evolutionary teleology*.

The irreducible figurality of language, then, plays an essential role in the irreducibly figurative nature of nature. For example, the alleged "incorrigible gap" (Miller) between sign and object (language and nature) will neither be explained away nor accepted. Rather that gap will be transformed within the context of postmodern ecology into a zoosemiotic phenomenon that describes the interpretive nature of nature within predator-prey relationships involving biological mimicry. Specifically, the inherent gap between predator (as Peircean Interpretant) and the signing action of nature as iconically and indexically configured prey species evolve to stand for something (in their habitat) to something (the predatory Interpretant) can be envisioned as an ecological or evolutionary synapse across which iconic and indexical signs pass just as when across real synapses (Olds 168) information passes in the form of nor-epinephrine's iconic shapes. Peirce's famous trichotomy of motivated icons and indices and unmotivated symbols is a biological concept, a function of this productive biological and semiotic gap that even at the level of predator-prey relationships represents a site of (Derridean) deconstruction and evolutionary reconstruction as predators attempt to solve the complex visual puzzles presented by prey species and transform motivated icons and indices into unmotivated (arbitrary) and edible symbols. The production of such arbitrary symbols in the minds of predators is a prototype of human symbolic behavior and the cultural evolution that this symbolization drives. Anttila's notion of the basic tendency of iconic indices to undergo symbolization is both a biological and a linguistic phenomenon that is predicated upon the existence of a gap--but a gap with an evolutionary role.

The Frankfurt School and a Dialectics of Nature

Helen Denham, University of California-Berkeley

The Frankfurt School continues to receive attention for its effort to construct a "critical theory of society." Re-evaluating and building on Marxism, critical theory is intended to "throw the light of consciousness upon even those human relations and modes of response which have become so deeply rooted that they seem natural, immutable, and eternal." (Max Horkheimer, 1937, "Traditional and Critical Theory") Members of the Frankfurt School including Max Horkheimer, Theodor Adorno, Erich Fromm, and Herbert Marcuse, attempt to synthesize a class analysis with critiques of science, psychoanalytic methods, and a sensitivity to the relations between humans and non-human nature. Their work, dating from the 1930s, serves as the cornerstone to critical theory and continues to offer insight for theorists concerned with oppositional struggles and social transformation.

As a member of the inner circle of the Frankfurt School, Max Horkheimer in particular, introduces a series of concepts that have provoked enduring debate. Among these are the notions of objective and subjective reason and the domination and revolt of nature. Through such publications as *Eclipse of Reason*, and *Critical Theory,* Horkheimer draws attention to a historical trend that deeply disturbs him: the process by which human society has lost sight of "truth" or "objective meaning" and thereby also lost the ability to make decisions based on the "desirability of any goal in itself." (*Eclipse of Reason*, p.7) Such a trend he describes as the triumph of instrumentalism or subjective reason. As an end result, human activities -- including scientific practice -- lose any meaningful rationale and become rooted instead in personal preference and majority opinion.

With the rise of subjective reason, he argues, comes an attendant rise in the domination of human and non-human nature. No longer do nature and the human subject have meaning or purpose in and of themselves; instead, humans exist for the sole aim of self-preservation, while nature has been "degraded to mere material, mere stuff to be dominated." (*Eclipse of Reason*, p.97) A consequence of these repressive conditions is the "revolt of nature," or rather, the tendency of both humans and non-human nature to express their suppressed characters through conscious and unconscious resistance.

This paper explores the theoretical foundations of the above concepts both in their historical context and as they relate to contemporary concerns. Discussion focuses on the idea that neither humans nor non-human nature can ever be entirely repressed, mastered, or controlled. Within this context, the domination and revolt of nature suggest an inherent resistance to conditions of oppression. On a subtler level, the concepts also imply that non-human nature has agency. These dynamics could be described as a "dialectics of nature." The purpose of this paper is to open a dialogue to explore both key concepts in early critical theory and the more general questions of human relations to the non-human world, the role of science in 20th century society, and the possibility of emancipation through social movements.

Samantha Fenno
Carnegie Mellon University

Abstract

Changing the Object: (Post)Structuralism, Scientism and Disciplinary Validation

In light of more recent theoretical developments, structuralism may seem to be the mere shadow of a beginning point for what constitutes the main activities of English departments in America today—the slightly embarrassing origin of the recent resurgence of theories about literature. The widespread acceptance of poststructuralist tenets in English departments bespeaks a shift in epistemological grounding for literary criticism that has the effect of rendering structuralism a brief moment in the history of literary studies that easily pales in comparison to its mightier poststructuralist children.

The study of literature in the American academy can be read as a site of struggle for validation over what methods will be appropriate for studying literary texts. Structuralism represents a recent juncture in the pervasive problem of how to legitimate English a discipline, when disciplinarity has historically been conceived along the lines of the scientific disciplines. The first goal of this paper will be to show that there is a continuing trend in structuralism toward conceiving the discipline of English along the lines of scientific disciplines. In the wake of this claim, I hope to suggest more broadly that in the case of structuralism, the appeal to science is not just the result of disciplinary constraints, or pressures from within the academy. Rather, in its attempts to attain rigor by appealing to the qualities that justify scientific activity, structuralism does something more than just fail to become scientific: it becomes scientistic.

In light of post-structuralist critiques of science, the claims about science in structuralism may seem to be dated and naïve, claims that can safely be forgotten in favor of more useful theories. But forgetting one's parents, however desirable that enterprise might seem, also entails some dangers: the possibility of repetition, the possibility of forgetting what was desirable about their goals, the possibility of failing to understand the motivations for one's current situation. But to what extent does the scientism present in the foundational assumptions of structuralism affect post-structuralist positioning regarding disciplinary validation? I will argue that—while post-structuralist methods seem to depart radically from structuralism—the apparent rejection of science in post-structuralism is not in fact a rejection of science as method of validation ; instead, while science is superficially rejected in post-structuralism, post-structuralism relies on the same foundational claims that render structuralism scientistic.

THE TROPE OF ACCIDENTAL DISCOVERY IN FRANCIS BACON'S GREAT INSTAURATION AND NEW ORGANON

Michael Witmore
UC Berkeley

In The Great Instauration and New Organon, Francis Bacon points out the manifold ways in which natural philosophers have failed to increase their knowledge of nature. Indeed, what is problematic for Bacon about the available methods of gaining natural knowledge is not simply that they are ineffective, but that they lead investigators to experience their continued ignorance of natural processes as insight. The message of the Great Instauration and New Organon seems to be this: without some saving "helps" for the philosophical intellect, all future progress in science will be error ridden at best, systematically self-deluding at worst.

Given this state of affairs it is amazing that any prior progress in natural philosophy could have taken place. In a world where error is almost assured by cultural mores and individual foibles -- what Bacon enumerates in his critique of the Idols -- the only way that progress in natural philosophy could have been made was by accident. Again and again, in fact, Bacon recognizes that past discoveries were assisted by chance rather than some methodological insight which precipitated new knowledge. Ordnance and the magnet, for example, were not sought for in advance, but once "stumbled upon" proved to be of immense practical value. But these and other past accomplishments in natural philosophy are easily misconstrued, according to Bacon, as confirmation that the current means of gaining natural knowledge are truly effective. On what grounds, then, might readers of the these works be led to suspect the effectiveness of current methods of inquiry and so see the value of the epistemological prescriptions Bacon is making?

Bacon faces a difficult rhetorical problem since, as he points out, the very people he needs to urge methodological reform upon will be the most certain that they do not need his advice. It would seem that they too -- scholastic philosophers, for example, or alchemists -- could only discover their own ignorance by accident, since their beliefs and methods of inquiry will almost always mistake ignorance for insight. Bacon, too, is skeptical that anyone could have peeked above the ignorance of inherited beliefs and so judged their insufficiency. By claiming that his own discovery of the sources of error in con temporary methodologies was an "accident," "a child of time rather than of wit," he secures an otherwise totally inaccessible epistemological ground from which to critique the present state of knowledge. To induce a similar accident in his readers, Bacon uses analogies and figural language -- for example, a painting of pious shipwreck survivors in which those who prayed but died anyway never live to be painted -- to represent the unrepresentable ignorance pandemic among the learned who might be reading his treatise. Given his understanding of the obstacles impeding intellectual progress, figurative language becomes an indispensable instrument in Bacon's program. For Bacon, the tropical potential of language is the only means by which the bent-mirror of the human mind could be forced to reflect its own deformity, register its own ignorance. Tropes themselves, then, may by the happy accidents of language which occasion insight -- here a particularly rare kind, since what Bacon seems to be claiming for himself is the accidental discovery of the accidental nature of discovery. (His methodological prescriptions are thus intended to increase the likelihood of such accidental discoveries, themselves the product of "experience," by maximizing human contact with nature.) In a century which both prizes univocality as the ideal of scientific language and insists that there can be a methodical way of gaining natural knowledge, Bacon's indebtedness to tropes and accidents seems all the more remarkable. It is perhaps this debt of the New Philosophy to what must be represented indirectly, discovered accidentally, that is registered at its "origin" in Bacon's work, even if it must subsequently be forgotten as empirical science acquires more prodigious practical and institutional power.

THE CULTURES OF THERMODYNAMICS

Bruce Clarke, Chair

Bruce Clarke, "The Selected Poetic Works of James Clerk Maxwell"
John G. Hatch, "Images of the Evolution of the Universe: Thermodynamics in the Art of Kazimir Malevich"
Stephen J. Weininger, "Sooner Silence than Confusion: The Introduction of Entropy into Chemistry"
Martin Rosenberg, "Complicity and the Counter-Culture of Thermodynamics: Oswald Spengler and Thomas Pynchon"

The papers in this session track a series of moments in the cultural career of energy laws. British physicist James Clerk Maxwell gave thermodynamics an influential spin with his creation of the Demon who defies the second law, and Maxwell's ability to do science by constructing ideal models extended to the unification of optics and electromagnetism. By the early 20th century, thermodynamic laws had been elaborated into broad systems of energetics. Russian painter Kazimir Malevich adapted energetic scenarios to a series of his greatest abstract works. Meanwhile, many chemists, wary of its extra-scientific baggage, avoided the entropy concept. The institutional history of chemistry's relation to thermodynamics highlights the cultural differences that exist within as well as without the sciences. From Spengler to Pynchon, the problematic exportation of the statistical methods of energy physics to social, historical, and literary discourses has been a prominent feature of twentieth-century writing. In sum, this panel will document that as a cultural event, thermodynamics has taken as many turns as a Carnot cycle.

THE SELECTED POETIC WORKS OF JAMES CLERK MAXWELL

Bruce Clarke
Department of English
Texas Tech University

Some of James Clark Maxwell's lesser poems are sophomoric school exercises, but some of the best are satiric verse commentaries on the scientific conference scene, in particular, epitomes or send-ups of papers delivered at the annual meetings of the British Association for the Advancement of Science. But Maxwell's most famous poetic work is certainly Maxwell's Demon, the heuristic invention or scientific personification he brought into being in 1867. Using a letter to P. G. Tait as a convenient impromptu forum, Maxwell constructed a mechanical model, a fictive machine. The Demon first materialized as the intelligenceposited within, or alongside, a very simple piece of hypothetical mechanism, for the purpose of "picking a hole" in the second law of thermodynamics. It is all, in Maxwell's seminal composition, a question of "cleverness" combined with "neatness," that is, the application of an intelligence, by definition weightless and frictionless, at the proper infinitesimal scale. Maxwell's Demon marks the moment when science first seized strong conceptual purchase on the principle of mechanical dissipation, by means of a daemonic operator or allegorical model.

What Maxwell understood, I think, is that the distinction between figurative simulation and literal reality reaches a kind of vanishing point, especially when the conceptual act of modeling physical hypotheses turns out at times to unlock the actual structures of things. Previously, his paper "On Physical Lines of Force" (1860-61) had investigated the possible interrelation of electricity, magnetism, and light, by constructing a complex mechanical model of the electromagnetic field, or as it was known in his time, the magneto-electric aether. As William Berkson has commented, Maxwell "allowed himself to imagine an impossible mechanism which might have, nevertheless, some analogies to the true one. . . . Maxwell's mechanical model of the electromagnetic field is one of the most imaginative but least credible ever put forward." Astoundingly, by calculating his model's elasticity, he derived a figure for the propagation of electromagnetic currents that was virtually identical to the speed of light. Maxwell's mechanicalaether model enabled him to draw experimentally demonstrable conclusions about the unity of electromagnetism and light. In short,he unified field physics with a heuristic thought-construction. In the arena of thermodynamics as well, Maxwell's poetic works made openings for scientific theory by imagining apt mechanical vehicles for imponderable tenors.

IMAGES OF THE EVOLUTION OF THE UNIVERSE: THERMODYNAMICS IN THE ART OF KAZIMIR MALEVICH

John G. Hatch
University of Western Ontario

Kazimir Malevich's Suprematism presents a narrative based on the Russian painter's interpretation of contemporary developments in poetry, art, mysticism, and socio-political philosophy. Malevich felt that all were undergoing fundamental changes which disclosed a common objective, a "new reality": poetry had discovered the transrational or `zaum'; the art of Paul Cezanne had initiated the dissolution of form and the end of the tyranny of mimesis; mysticism was foreseeing the growing predominance of the spiritual over material reality; and, socio-political philosophy was announcing the end of class struggle and history. Suprematism encapsulated the "new reality" suggested by these recent developments and attempted to present them in a simple and coherent manner.

The numerous scientific references found in Malevich's writings suggest he interpreted the physical sciences as revealing a similar transformation occurring in nature. In 1916, Malevich was introduced to recent developments in physics through the writings of the mystic philosopher P.D. Ouspensky, where Malevich encountered a model of the physical universe which closely paralleled his own image of the "new reality." Drawing on a variety of scientific and non-scientific sources, Malevich gradually incorporated thermodynamics into the narrative of Suprematism. His Suprematist paintings came to express the evolution of energy toward a state of total equilibrium or "classical tranquility." In essence, Malevich's last Suprematist paintings became objectless images of thermal death where one encounters the "ultimate, unknowable Godhead, seat of perfection, purity and ultimate repose." For Malevich, this marked the endpoint of the evolution of human consciousness, society and the physical universe.

SOONER SILENCE THAN CONFUSION: ENTROPY AND EARLY 20TH-CENTURY CHEMISTRY

Stephen J. Weininger
Worcester Polytechnic Institute

Entropy is one of the most grandiose of scientific conceptions. Its cosmic import has evoked extravagant rhetoric, examples of which will be given. The association of entropy with "disorder," "chaos," and the "heat-death of the universe" guaranteed that it would catch the attention of lay people as well as scientists from the late 19th century to the present.

However, neither the formulation, the interpretation nor the utilization of the entropy concept were uniform and uncontroversial even among scientists. The second law of thermodynamics, which provides a framework for the entropy concept, has been stated in a myriad number of ways, almost all of which are context dependent. As might be expected, the particular form of the second law in use was a function of the problem being solved. Beyond that, the interpretation and even the importance accorded entropy depended on the audience. Differences over the implications entropy have much to tell us about scientific disciplines define themselves, and their relationship with neighboring disciplines.

Today discussions of entropy are found in every freshman chemistry text. Yet my survey of early 20th-century physical chemistry and thermodynamics text books (1900-1925) revealed that even these advanced works had little to say about entropy up through World War I. In fact, there is clear evidence that most authors deliberately avoided the topic. The reasons varied from the highly specific and operational to the much more general and conceptual, and even cultural. For example, the notion that entropy might be "subjective" was disturbing to those scientists whose philosophy of science was essentially positivistic.

There are several "morals" of this story for those of us in literature and science. One is that undifferentiated labels like "science" may obscure as much as they reveal; we need be more attentive to differences among the sciences. Another is that grand, undifferentiated concepts like entropy may present opportunities for some writers, while constituting headaches for some scientists. We do share a common set of constructs and vocabulary, but making them operational within our disciplines can lead lead to surprising disparities in outcome.

COMPLICITY AND THE COUNTER-CULTURE OF THERMODYNAMICS: OSWALD SPENGLER AND THOMAS PYNCHON

Martin E. Rosenberg
Department of English
Eastern Kentucky University

In recent theorizing about literature and science, I have distinguished between precise and imprecise allegory at work in the constructions of correspondences between particular physical laws and particular cultural processes. The correlations between the mathematics of Boltzmann's Order Principle (in thermodynamics) and Shannon's formula for computing the amount of noise (in information theory) suffices to illustrate a precise allegory. What I would like to do is to demonstrate and then theorize about the cultural work implied by inversions of an imprecise allegorical construct at work in both Oswald Spengler's Decline of the West and in Thomas Pynchon's Gravity's Rainbow: what both works share is an interest in the cultural implications of statistical representations of contingency in physical systems generally, and in their seeming indifference to the sources of their illustrations (from quantum mechanics and thermodynamics) for what they take to be symptoms of global and local cultural processes respectively. In other words, the historical difference in the contemporary understanding of entropic processes at the beginning of this century and in the late 1960's only partially explains this inversion.

For Oswald Spengler, whose nineteenth-century thinking Pynchon's character Pointsman resembles, the (very different) statistical formulations that by the 1920's stood at the heart of both quantum mechanics and thermodynamics bespeak the collapse of western civilization, for which "absolute scientific exactitude" (417) constitutes the central assumption. A physics based on contingency and uncertainty, Spengler believes, signifies a decline, a "cultural entropy" presaging Götterdämmerung: "What the myth of Götterdämmerung signified of old....the theory of Entropy signifies to-day" (423-4). Randomness, a lack of precision associated with the theory of entropy but now seen at the heart of all human and natural sciences, symptomizes that decline. Spengler sees no important distinction between the philosophical significance of those statistical methods underlying quantum mechanics, and those methods used in thermodynamics. The historical appearance of these statistically-based physical theories presages a decline of the West, and here Spengler is engaged in a circular assumption that derives its metaphorical power by reference to entropy in the form of the second law of thermodynamics. Decline is troped by a loss of control.

Spengler's zany physics matches Pynchon's blurring of the boundaries between the dynamics of quantum events (with reference to symmetry-breaking and certain particle interactions such as electrons exchanging a photon, and the event of a vacuum bubble) and irreversible processes from non-equilibrium thermodynamics (such as the chemical scroll waves of the B/Zh reaction), with the difference that Pynchon seems to simply invert Spengler's conceit for his own imaginative ends. Through textual clues indicating the possible graphing of character trajectories and encounters (on Feynman diagrams) as symmetry-breaking particle trajectories (distinguishing between time-past and time-future), and as particle-interactions that seem to parallel aggregating and other self-organizing processes in chemistry and biology, Gravity's Rainbow seems to engage in the same slippage between statistical accounts of physical systems in quantum mechanics and thermodynamics that Spengler engages in to trope various local tactics of resistance to global domination. That these inversions also code the question of transgression and complicity with respect to the positions of hegemony and marginality, a further inquiry becomes necessary into the role of seduction in the cultural work of scientific allegory.

The Other as Savior: Race and AIDS in Lorenzo's Oil

Carol Colatrella
Georgia Institute of Technology

The 1993 film "Lorenzo's Oil," directed by George Miller and starring Susan Sarandon and Nick Nolte, relies on tropes associated with AIDS narratives to depict the cultural construction of another illness. In "Lorenzo's Oil," the parents of a little boy with ALD (adrenoleukodystrophy) learn that part of their fight against the disease breaking down their son's neurological system must include battling doctors who impose traditional methods of seeking therapies and cures and resist innovations. The movie represents Michaela and Augosto Odone as heroically challenging medical logic and motives to help their son Lorenzo and other boys afflicted with this rare genetic disorder. Mother (a linguist) and father (an international economist) review medical research, raise funds to support the collaborative conferences and research of scientists, and serve as tireless caregivers to their son because they believe that they must immerse themselves in the culture of the disease to understand and defeat it. This family narrative, a detective story describing the miraculous attempts of parents to prevent the imminent death of their son, reconfigures the history of AIDS by making use of racial categories. To tell the story of how the Odones successfully resist the attempts of medical authorities to control their son's fate, Miller alludes to cultural prejudices against race and persons with AIDs as a means of defining, and investing pathos in, Lorenzo's dilemma.

Brother, Lover, Patient, Friend:
Gay Men with AIDS in Non-Fiction by Care-Givers

James W. Jones
Dept. of Foreign Languages, Literatures and Cultures
Central Michigan University

Since the beginning of this health crisis, gay men have been creating new ways to speak about their experience both as gay men and as gay men with HIV. Care-giving institutions (GMHC, Shanti Project, San Francisco AIDS Foundation), ways to remember and to honor those who have died (the NAMES Project Memorial Quilt, red ribbons), and an "AIDS culture" made up of literature, film, art, video, dance, performance art, etc. are just some of those avenues through which gay men with HIV have told their own stories.

Sometimes--indeed, quite often--those with HIV and AIDS cannot tell their own stories, at least not to anyone beyond their immediate circle of friends and family. They are too sick to do so, or feel they lack the talent or, importantly, the time, to write down what they want to share. Another person then writes their story. That person might be the gay man's lover, physician, relative, or care-giver (e.g. a "buddy"). Of course, these categories are not discrete: a care-giver is often also a lover or a relative or a friend.

That is where this paper begins. In reading these non-fiction reports (diaries, biographies, journals), one is given of course a view of a gay man with HIV or AIDS that derives from a mixture of perspectives and intents. The perspectives might include those of a brother, a lover, a patient, a friend, an ex-wife, a mother. How those perspectives intersect and interact with the perspective of the gay man with HIV or AIDS forms the central question of this analysis. Where is the gay man in this text? Who is he allowed to be? What does he say? How is he described? Who is allowed to speak? What serve as the centers of focus and what is moved to the margins?

The intents might include desires to educate, to grieve and to memorialize. Perhaps one might also find that other intents intervene, such as a desire to focus on the man's public life and deflect attention from his private life. To put it bluntly: Whose life is it when somebody else is telling the story? How "gay" is the gay man once he's dead?

While focussing on works that have appeared since 1991, the paper will also discuss works from the first decade of AIDS. These will include, among others, the following:

Ronald O. Valdiserri, Gardening in Clay (1994)
Abraham Verghese, My Own Country (1994)
Neal Hitchens, ed., Voices That Care (1992)
Joe Brown, ed., A Promise to Remember (1992)
necrographies of Rudolf Nureyev
Cox, Elizabeth, Thanksgiving: An AIDS Journal (1990)
Pearson, Carol L., Goodbye, I Love You (1988)
Peabody, Barbara, The Screaming Room: A Mother's Journal of Her Son's Struggle with AIDS (1986)

"The Novel Is the Most Subversive Form":
Leprosy as AIDs in Time to Kill

Deborah Lovely, Department of English
Penn State University, Altoona PA 16601

Frightened that he has contracted leprosy through sexual contact, the protagonist of Time to Kill approaches an Italian doctor working in occupied Ethiopia. Unwilling to admit his fears of having the disease, he pretends to be writing a novel in which the main character finds he has leprosy, or at least the signs of it. The doctor, genial and cooperative, chuckles, "Ah yes, the novel is the most subversive form." But, subversive of what?

The film made in 1989 and starring Nicholas Cage carries many Italian credits, yet it seems a clear commentary on the reaction to the AIDs epidemic in the U.S. at that time, especially in the tendency to blame others, such as Africans, colonizers, the medical establishment, and the promiscuous. This eagerness to blame reveals as well a determination to resist any chance of being at risk, and the result of holding these contradictory reactions comes in the alternating hysteria and complacency evident in our national response to the virus. Cage's character demonstrates the selfishness at root in such reactions and response. Though he never intends serious harm, his actions inevitably lead to others' severe disadvantage or death. These consequences parallel the effects of AIDs as people unintentionally spread the HIV virus in their own efforts to seek pleasure and avoid pain, especially the pain of learning of being HIV positive.

In Time to Kill a turning point in the plot has Cage's character desperate to return home to his wife and children in Italy and equally desperate to avoid the needed medical inspection before returning home. The implications multiply as Cage's character refuses to learn for himself whether he has this disease, refuses the rights of his military superiors to learn whether he has the disease, and seems clearly determined to put his wife at risk for what he believes to be a sexually transmitted disease.

Time to Kill adopts the subversion ascribed to the novel to undermine both the complacency and hysteria attending the AIDs epidemic.

French vs. American: Contrastive Rhetorics of Science in the AIDS Virus Hunt

Carol Reeves
Butler University

Once thought a "glib and oily art" beyond the realm of science, rhetorical action (the use of signifying practices--argumentative, linguistic, and stylistic--conforming to the constraints of convention and context in order to convince an audience) is now viewed by scholars in several fields as an important factor in the social construction of knowledge. In any scientific debate, the degree of importance and influcence of rhetoric is relative to the degree of uncertainty, competition, and urgency concerning a particular problem that a scientific community must address.

The early period of the AIDS virus hunt offers a particularly rich example of the importance of rhetorical action during a period of uncertainty, competition, and urgency. By 1983, there was a proliferation of causal explanations of AIDS ranging from "lifestyle" factors to fungi. Fleck calls such a situation an "excited conversation among several persons all speaking simultaneously among themselves and each clamoring to make himself heard, yet which nevertheless [permits] a consensus to crystallize" (p. 15).

Yet the viral hypothesis for AIDS, like any consensus, didn't crystallize out of nowhere. It was manufactured within the community via arguments and counter-arguments, disclosures of data and challenges to that data. The first papers published in Science (May 20, 1983) offering a viral hypothesis played an important role in the movement toward consensus. While containing no definitive linkage data and while one team was tracking the wrong virus, these papers served an important social purpose: to theoretically reorient the research community, or, as Bob Gallo, who wrote and co-wrote all but two of the papers, now claims, "to center the field, to prepare them to accept a viral cause, to begin thinking that way so we wouldn't waste more time" (interview, NCI, August, 1995).

While these papers all served the same social purpose, they do not exhibit the same rhetorics. A close analysis of two of these papers, one from Gallo's lab (Gallo, et al.) and the French lab's paper (Barre-Sinoussi, et al) reveals strikingly different rhetorical choices that could be the result of differences in culture, personality, and institutional position. Gallo's rhetorical style is aggressive, direct, explicit, and takes full advantage of the rhetorical moves available to authors of research reports in Science while the approach in the French paper is more passive, indirect, implicit, and takes advantage of few optional rhetorical moves. Gallo and his colleagues employ linguistic and organizational emphasis on authority, precedent, and agency while the French actually de-emphasized the novelty of their conclusions and those aspects of their observations that worked against the American's hypothesis. These and other rhetorical differences can be traced throughout the period of the virus hunt, with the Gallo rhetoric becoming even more assertive in 1984.

The differences demonstrate something of the range of rhetoric possible in a discipline in which the writing is too frequently dismissed as purely conventional. But they also reveal the strategies made by scientists competing for credit before an obs erving audience and may explain why one scientist, Robert Gallo, acquired credit early on among many of his peers and the public while the French scientists were forced to defend their credibility and their status as discoverers. Finally, both teams have learned some rhetorical lessons: Gallo has been essentially reprimanded, not for stealing a virus, but for breaking certain rhetorical boundaries in science, and the French team has, according to Francois Barre-Sinoussi, "learned to be more aggressive when we write papers for American journals" (interview, Washington, D.C., July, 1995). The fine line between rhetorical aggression that offends and rhetorical passivity that hides apparently must be redrawn against the fabric of controversy.

CRYONICS AND THE PROMISED BODY

Richard Doyle
Penn State University

Over the past 50 years, the "life" sciences, networked with the rhetorics and practices of "information," have displaced "life" as their object, researching instead molecules and networks which make possible the complex entities called "living systems." In the process, the corporeality of organisms has receded into the background, been forgotten, put on hold, suspended, and the sturdy opposition between animate and inanimate systems has been eroded. Thus it would seem that one of the "grand" topoi of the humanist projects, "life," has finally been displaced by something other, a "post vital" effect of complexity and power which, as yet, has no name.

Yet, just as "life" has receded into the technological labyrinth, it has gone on support. Interventions as nebulous as life support machinery and as drastic as cryonics (the freezing of bodies and heads) challenge the simple erasure of "life" in the scientific and medical "molecular turn,"and these challenges all take place at the site of the flesh. In this talk I will look to 20th century practices of cryonic suspension as leading indicators of a political technology of the future or promised body, bodies that are no longer sites of prevention but are instead sites of futurity. In thrall to a future and yet lifeless, these bodies are occasions for the massive extension of discipline, a discipline beyond living.

FORGOING FRICTION: DIGITAL WORDS AND THE NEW ENTROPY

Alan E. Rapp
Independent (freelance critic)

In tracing the history of media technology—especially its means of storage and distribution—a process towards compression and, currently, digitization is apparent. The shift away from physical data storage (books, vinyl audio disks, magnetic tape, etc.,...) and towards more amorphous, digital environs is jarring in ways not previously considered by media theorists; "information" seems not only immune to the Second Law of Thermodynamics that conditions our corporeal realities, it seems to work rather contrarily to it. The amount of information on the Internet, for example, is expanding at a rate incommensurately greater than even the world's dizzying multiplication of human population. We now see bits able to emulate almost every facet of earthen reality; entropy does not apply to that realm quite as it does to ours.

However, as corporeal beings, humans are already made anxious in a twisted Freudian sense; what has overrun the sublimated fear of the decay and malleability of the body is that the ever-renewing font of digital information is entirely unsympathetic to that very own entropic, physical life. Humans may even have to build more agents of digital destruction, like viruses or built-in information half-lives, to synchronize our media with ourselves.

The affinities and paradoxes inherent in the newly-forged relationship among humanity and its digital information outflow is examined in this paper, and the sources of the new anxiety that arises in light of the new entropy.

The banks of data that house words, images, and files around the world are no longer the true loci or repositories of the information. The decentralized nature of the Net, which is still structured as it was originally conceived in the seventies, assures the replication and multiplication of data. A parallel, non-physical universe now exists; its laws are less physical than fiat.

Words that aren't impressed on a hard medium, that are frictionless, that are mirrored and replicated and transmitted globally, constitute new and powerful pseudo-life. How entropy will be defined in light of these developments is the task set before thinkers of the next millennium.

"A VOYAGE TO THE WORLD OF CARTESIUS": DESCARTES, SCIENCE, AND CENSORSHIP

Thomas L. Cooksey
Armstrong State College

"Rid yourself of that Ridiculous custom you have
taken up in the schools of introducing questions
of Religion in matters purely philosophical. ... I
am giving you clear Matter of Fact, and you desire
me to account for the conduct of God!"
-- Gabriel Daniel, *Voyage du monde de Descartes*

On the twentieth of November 1663, the Congregation of the Holy Index in Rome included in its catalogue of prohibited books, the works of the French philosopher and scientist, René Descartes. Specifically cited were *The Meditations*, *The Declaration Against Regius*, the letters to Dinet and Voetius, and *The Passions of the Soul*. The terms of the condemnation were *donec corrigantur*, that is, the books were to be sequestered "until corrected," an ironic sentence since Descartes had been dead some thirteen years and the books in wide circulation. Given Descartes long avowed loyalty to the Church of Rome, how are we to understand its attempt to censor his philosophical and scientific writings?

A satiric novel by the French Jesuit Gabriel Daniel offers some insight into this mystery. *Un Voyage du monde de Descartes* was published in 1690 and subsequently translated into English as *A Voyage to the World of Cartesius* (1692). Evoking the spirit of Lucian's *Dialogues of the Dead*, Daniel's novel proports to be the "true history" of the narrator's trip to the celestial world of Cartesius, a realm created by Descartes' soul after the death of the philosopher's body. While the travelers ostensibly praise Cartesian doctrine, the novel represents in reality an attempt at an extended refutation. Of particular significance is a vehement assault on Descartes' corpuscular theory of matter by the spirit of Aristotle.

Daniel's novel points to the Church's concern. Atomistic theories of matter, such as those of Galileo and Descartes, undercut the Aristotelian doctrine of substance. In so doing, it challenged the scientific underpinning of transubstantiation, the philosophical and scientific explaination and justification of the literal transformation of the bread and wine into the body and blood of Christ in the Eucharist of the mass. The Church saw in Cartesian doctrine an attack on the foundations of faith. In setting down the path to reexamine the foundations of science, Descartes had unwittingly begun the parting of the ways of science and theology. In censoring Descartes' books, the Congregation of the Index hoped to shore up the crumbling Aristotelian-Thomistic synthesis of science, philosophy, and theology.

Bacon's Puritan Epistemology, the Crisis of Representation, and the Way of Natural Theology

Stuart Peterfreund, Department of English, Northeastern University

The term natural theology originates with Bacon's Advancement of Learning (1605). According to Bacon, "divine philosophy or natural theology . . . is that knowledge or rudiment of knowledge concerning God, which may be obtained by the contemplation of his creatures; which knowledge may be truly termed divine in respect of the object, and natural in respect of the light" (II.vi.1). But the knowledge resulting from such contemplation, like puritan knowledge of election itself, is based on a faith that cannot look beyond the sphere of works, and does not include direct, unmediated knowledge of the agent responsible for those works.

> The bounds of this knowledge are, that it sufficeth to convince atheism, but not to inform religion: and therefore there was never miracle wrought by God to convert an atheist, because the light of nature might have led him to confess a God: but miracles have been wrought to convert idolaters and the superstitious, because no light of nature extendeth to declare the will and true worship of God. For as all works do show forth the power and skill of the workman, and not his image, so it is of the works of God, which do show the omnipotency and wisdom of the maker, but not his image. (II.vi.1)

In a sense, the limits that Bacon places on the project of natural theology should come as no surprise. As he states, echoing Genesis 2:19-20, "the first acts which man performed in Paradise consisted of the two summary parts of knowledge; the view of creatures, and the imposition of names" (I.vi.6). Nowhere is there any reference to humanity being created in God's image or of human "dominion" based on a Maker-maker analogy (Genesis 1:26). But to the extent that all of the acts in Eden, including the naming of the animals, bespeak a teleology if not a theodicy outright, the interdiction of God's image signals the effacement or occlusion of his/her intentions in creating those works.

Although some early natural theologians, including Burnet and Newton, struggled with these issues of interdiction, and effacement or occlusion, others, such as Ray and Derham, saw themselves as hard pressed to recover God's image, if only for the purpose of harmonizing natural theology with a supervenient theodicy. Ray, for example, discusses God's "footprints," and Derham is fully reassured that one may remark divine lineaments in the human frame created in God's image. This discussion will focus on the strategies of recuperation mobilized by Ray and Derham, as well as pointing to the implications of those strategies for subsequent natural theologians.

Science, Faith and Reference:
Cajal's *Cuentos de vacaciones* and Palacio Valdés's *La fe*

Dale J. Pratt
Brigham Young University

La fe (1892) and *Cuentos de vacaciones* (1905) are optimistic texts. Palacio Valdés's Padre Gil finds his God, and Ramón y Cajal's characters resolve their problems accordi to their own gods (the ideals of progressive science). Padre Gil's happiness comes only after a leap of faith away from empiricism into the comforts of religious mysticism. Conversely, Cajal's stories are their most interesting when the plot unfolds according to empirical descriptions of cellular activity. The texts share a fundamental feature which belies their ostensible dissimilarities: a protracted examination of language's ability to represent certain phenomena. In Cajal's stories, the reduction of human activity to the workings of cells ultimately falters; it reaches a point beyond which empirical language cannot refer. In Palacio Valdés's text, padre Gil's questioning of his faith leads to what many readers have considered an unrealistic or unsatisfying conversion. What is real a unreal is precisely the question padre Gil grapples with; rather than reasoning with the reader--by making the conversion seem more real–Palacio resorts to narrating an imperfect man's attempts at resolving his doubts.

The major rhetorical problem for Cajal in his narratives is that many of the cellul forces determining human behavior are difficult to understand without resorting to metaphors derived from human activity. Ironically, even while Cajal casts his human characters in terms of cellular forces and strict determinism, he must depict his cellular protagonists in terms of human agency and desires. Cajal wants science to transcend its linguistic nature and refer transparently to the world of objects, but he demonstrates in *Cuentos* that such transparency is impossible. Words explain not desire, but only how it expressed or configured. The reward of a reduction of love to cellular activity is the elimination of a layer of metaphysical talk about the soul. The ultimate "why" remains unanswered, but of course that is the question motivating every scientist's explorations

Though in *La fe* Padre Gil is the hero, he resembles Cajal's ignorant Esperaindeo Carcabuey; his companion Alvaro Montesinos is like the enlightened Jaime Miralta. In contrast to Esperaindeo's decision to follow Jaime's lead into the "natural" world of empirical facts, Gil's renunciation of his former rational understanding of the world lea him deeper into metaphysics. For him, the sole "hard" or grounded concept is his faith. During his conversion, however, padre Gil deciphers the meaning of life because his metaphysics and the hypotheses he carefully chooses lead him directly to the answer. H needs no further enlightenment from his senses; in Cajal's terminology, the neuronal pathways of his brain are isolated completely from the outside world. Whereas Cajal progresses empirically to the limits of inexplicable desire and will and then desists, pad Gil continues on. From the world's perspective, his journey into the ineffable satisfactio of all desire leaves him mute.

Both texts can be read as allegories of Spain's fledgling modernity. Spain is not a exemplary figure, whose intellectual background has adequately prepared it for a titani contest between the very best arguments faith and science have to offer. Rather, Spain h had only a modest education in modern science. That Spain continues to struggle with question is a sign of its increasingly modern cultural integrity and maturity. Cajal and Palacio Valdés do not configure harsh polemics between ideologically resolute characte but rather internal probings and friendly chats. This aesthetic choice reflects a new intellectual environment in late nineteenth-century Spain.

Providence, Newtonism and Appropriate Technology in Christopher Smart

Dennis Costa, Comparative Literature, Boston University

Christopher Smart's poetry announces a systematic criticism of what had become the reigning scientific model by the mid-18th century: mechanism, determinism and an increasingly materialist assumption about the nature of the real. Smart praises Newton for his genius and personal piety. But Newton*ism*, in Smart's view, equally threatens divine and human freedom by blasphemously misunderstanding God's providential art (nature, time) as entirely calculable or predictable and by hubristically mistaking human art (technology) as the means of subduing nature. I propose a set of glosses on Smart's greatest poem, Iubilate Agno, which would make the following points:

--The description of nature in Smart is closer philosophically to Einstein's correction of the Newtonian model and just as fraught with theological consequences. The "Systems innumerable" in nature are dynamic, so effected by their contexts as to make them finally unpredictable. And the range of the unpredictable/undecidable is precisely where the Spirit of God moves "suddenly," "vehemently," in a way analagous to catastrophic events in the cosmos. The diction of Smart's revision of Newton is distinctly pneumatological.

--Smart's is not the anxious, private enthusiasm of the religious dissenter, ever concerned that risk-taking may become blasphemy. Though the Iubilate Agno is produced during his forced confinement in an asylum, Smart conceives of his poetry as fit to be declaimed, a public prayer designed to be apposite to the high liturgy of the Anglican church, a liturgy which is 'orthodox' first of all because it remains tied to nature and to events in nature as both recurring and catastrophic.

--Far from being an avant-guard for the Luddites (he can even imagine the "enliven'd" virtues of a semi-automatic loom), Smart insists at the very outset of the industrial revolution that technology be appropriate-- ancillary to nature and in the control of a thinking person. His daily gardening in the flower-beds of the asylum becomes metonymic for sanity on a cosmic scale; humans should be stewards who prune, not owners who use. Nature in this sense is never property owned; it is a myriad of "properties," "virtues," differences, which must be *owned up to*, acknowledged and cultivated. Smart's central image for appropriate technology is "the Shears"-- its "dead materials" inspired by a human gardener and become thereby a real force in nature, part of the divine providence *absoluta*. "For the power of the Shears is direct as the life."

--Though violence and suffering always evidence human fallenness, the proper union of intention and technology will foster a quasi-Edenic balance between the provident economy of God and the human economy of 'goods' which are of necessity both material (food, clothing) and spiritual (insight, gratitude). Entropy is not loss. God's providence *ordinata* is such that the particular "properties" of a thing or person (even if hidden, or undetectable by any experimental method) never go fully unrealized. Punning on the patristic Greek *oikonomos*, Smart declares "Divine providence is a better manager."

--Against an 'enlightened' deism in which God is both passive and predictable, the poet asserts a divine prodigality which is continually creating the world. God's creativity, and humanity's participation in it, produces spiritual energies through matter. All energy is therefore relative to the "hold of the Spirit" (of both divine Pneuma and human psyche) upon any particular instance of matter's being in process. This fact of faith, which Smart calls "the Centre," becomes the constant of his physics, his square of the speed of light.

Friday, November 3, 2:45-4:15 PM

A. Science Fiction and Ethical Speculation **Westwood(HI)**
David E. Armstrong, organizer and chair

- Marilyn Gottschall: "Ethics without Gender"
- David E. Armstrong: "Brave New Waves: The Ethical Rhetoric of Constructivist Postmodernism and Science Fiction"
- Aditi Gowri: "'Not Doing' as Ethical Social Policy: Null-A and Alexander Technique in Science Fiction"
- Sara L. Miskevich: "Where None Have Gone Before: Ethics and Science Fiction in Popular Culture"

B. Visual Images I: Photography and Painting **Metro**
Martin Rosenberg, chair

- Anne Frances Collins: "Digital Photography and Visual Paradigms: A New Look"
- Hugh Culik: "A Womb of His Own: Diego Rivera, Frida Kahlo, and the Collaborative Body Shop"
- Stephen Hartnett: "'The Truth Itself': How Whitman, Hawthorne and Agassiz Employed the Daguerrotype as Scientific Proof"
- Karl F. Volkmar: "Crystals, Character, and Culture: Essentialist Structures as Informational Structures and the Representation of Gender and Class in the Impressionist Paintings of Camille Pissaro"

C. Responses to Darwin **Canyon(HI)**
Lawrence Frank, chair

- Greg Foster: "The Ape-Man in the Mirror: T. S. Eliot's Sweeney Poems as a Satire of Human Evolution"
- Cyndy Hendershot: "Masculinity and the Darwinian Feminine"
- Alan Rauch: "'See How the Fates, Their Gifts Allot': The Emergence of Darwinian Sensibility in Gilbert and Sullivan"
- Gary Willingham-McLain: "Darwinian Space"

D. Medicine and Illness I: The Body and the Mind **Pavilion**
Susan Connell, chair

- Kerry M. Brooks: "Free to Be You and Me?: The Prozac Debate"
- Marilyn Chandler McEntyre: "What's Borne in the Body: William, Henry and Alice James and the Mystery of Psychosomatic Illness"
- Christine Skolnik: "Gender, Neuropsychology, and Aesthetics"

E. Technology, Pathology and the Cultural Politics of the Emotions **Bel-Air Patio**
Kathleen Woodward, organizer and chair

- Kathleen Woodward: "Prosthetic Emotions"
- David Crane: "Plotting the Paranoid Text: Conspiracy and Communication in *Sorry, Wrong Number*"
- Amelie Hastie: "Revolution on the Border Between Emotion and Cognition: Freud's 'Rat Man' and *The X-Files*"
- Angela Wall: "'First, You Cry': Coming Out Stories and the Emotional Politics of Breast Cancer"

F. The Art of Reflective Science **Summit**
Sidney Perkowitz & Jeffrey Sturges, organizers and co-chairs

- Peter Brown (guest speaker): "Telling it Like it Is: Perspectives on Writing about Science for Non-Scientists"
- K. C. Cole: "Science Writing and Complementarity"
- Jeffrey Sturges: "Reflective Science Writing"
- Sidney Perkowitz: "Changing Quantum Physics into an Essay: Can It Be Done?"

ETHICS WITHOUT GENDER

Marilyn Gottschall
University of Southern California

Life in the postmodern era literally flings change upon us, so rapidly that we are barely able to cope with, let alone comprehend, it. One of the areas that is most problematic is the disintegration of firm boundaries between self and reality. This presentation takes a feminist look at that disintegration and suggests a way in which we might better learn to see ourselves as multiple beings through the deconstruction of gender. The cyborg as a trope in science fiction offers a resource towards such a process of deconstruction. Assimilating this resource will entail a rethinking of what it means to live ethically.

BRAVE NEW WAVES: THE ETHICAL RHETORIC OF CONSTRUCTIVIST POSTMODERNISM AND SCIENCE FICTION

David E. Armstrong
University of Southern California

The discourse of Constructivist Postmodernism (ConPoMo) is largely metaphysical, concerned with the "big" problems of humanity. As such it stands against the "modernity" of science, rationalism, war, and biosystem devastation by promoting values of wisdom, mysticism, "life creation" and ecological awareness. It also makes claims to uniqueness: writers such as Norman Denzin argue that ConPoMo is uniquely enabled to address such issues because of the movement's conceptual fragmentation of the social entity.

Science Fiction (SF) has outgrown its label as space opera and is now recognized as a refuge for writers addressing "big" metaphysical issues. Anti-utopian themes, challenges to dominant societal myths and the ability to look beneath surface meanings are standard fare in SF. The genre predates constructivist postmodernism by decades.

This paper argues that ConPoMo is essentially an academic expression of perspectives voiced by SF writers. Moreover, the movement is easily explicable within a "modernist" context. The paper rejects Denzin's contention that only PoMo can analyze current social interactions by demonstrating how ConPoMo concerns are themselves manifestations of a contemporary Euro-American revitalization movement, first evident in classic SF.

"NOT DOING" AS ETHICAL SOCIAL POLICY:

Null-A and Alexander Technique in Science Fiction

Aditi Gowri
University of Southern California

Working towards a better world seems to require a lot of effort. In any attempt to improve our social and physical circumstances, it often appears that inaction and apathy are the enemy — that vigorous action of some type is what we require.

Both Alfred Korzybski and F. Matthias Alexander would disagree with this seemingly commonsensical approach. Both of these early twentieth century thinkers recognized the role that unconscious habit plays in subverting any intention towards change. Our actions will have a tendency to follow these neural grooves or patterns rather than to accomplish our intentions. Each suggested that the essentially human capacity is inhibition rather than action: the ability to "not do" rather than the ability to do. Moreover, each developed a philosophy and a system of self-discipline by which habits or reflexes (of thought, and of movement, respectively) may be overcome. "Not doing" plays a key role for both — only by making conscious and inhibiting our own actions opposing our goals (rather than blindly, frenetically calling for the initiation of more action)~ can we accompllsh these goals.

The ideas of each of these somewhat inaccessible philosophers is illuminated and developed in science fiction — in the work of A. E. van Vogt and Aldous Huxley, respectively. This is not surprising, given the role that works of science fiction can play as thought experiments in social policy. By studying van Vogt's *Null-A* novels and Huxley's *Island* alongside the works of Korzybski and Alexander, I develop a theory of or a perspective on social policy whose primary element is "not doing." Examples may be found in any area, but a case linking transportation and ecology is particularly illustrative. If we would like to encourage the use of trains and buses rather than private automobiles for urban commuting, this is not necessarily best accomplished through subsidies to public transportation. An approach inspired by not doing would suggest rather that we simply cease the extant subsidies and social biases which favour private automobile use.

WHERE NONE HAVE GONE BEFORE: ETHICS AND SCIENCE FICTION IN POPULAR CULTURE

Sara L. Miskevich
University of Southern California

The literary genre of science fiction provides an excellent opportunity for authors, and their readers, to explore the ethical and social possibilities of human interaction, by placing those interactions in a setting very different from those to which we are accustomed. Science fiction also allows and encourages exploration of the possibilities of human interaction with and through the use of technology. Star Trek television shows, movies, and books are among the most popularly known and loved examples of this genre. Concepts from Star Trek (such as the warp drive and the phaser) have become enduring parts of popular culture.

The world of Star Trek, as created by Gene Roddenberry, stems from a vision of humanity (and other sentient races) engaged in interactions characterized by harmony, equality and respect. Conflicts are dealt with primarily through mediation and negotiation rather than violence. However, in actual practice within the stories this ethical vision is often compromised. The Prime Directive of non-interference with other races is more obvious and more discussed in the breach rather than the observance. While a vision of equality is held very dear, it is held dear by a Starfleet that is, in its upper echelons, primarily white, male and human. Technology is more often presented as threatening rather than enabling.

The inability of Star Trek interactions to live up to the espoused ideals of the fictional culture in these two crucial respects provides the starting point for an exploration of science fiction in popular culture as a resource for ethical education.

DIGITAL PHOTOGRAPHY AND VISUAL PARADIGMS: A NEW LOOK

Anne Frances Collins
The University of Texas at Austin

This paper considers the perceptual and cognitive transformations entailed by the introduction of digital technology into the realm of the photograph. The digitization of pictorial information as a series of binary oppositions in the computer provides for easy transmission and manipulation. Such innovations introduce a host of new choices for the representation of visual information, forcing us to reevaluate the conventions previously associated with photographic accuracy. No longer can we assume that some causal relationship exists between a digitally produced "photograph" and a counterpart in the world around us. Traditional indexical features inherent in an image may be moved and reconfigured in the picture plane; the visual features previously associated with human touch may be constructed with the computer. Even our reliance on traditional systems of perspective becomes a matter of choice given the manipulative capabilities of digital technology.

Both the invention of photography and the introduction of digital photography represent particularly interesting moments in the history of art. Around each of these technologies two groups have coalesced: those with a scientific background and those schooled in the arts. In some sense, it might be claimed that the repercussions of such divergent interests interfered with one another: the pictorial aspects of photography were acknowledged prior to its scientific applications, and the creative intuitions of more recent artists occasionally frustrate the technical procedures of computer scientists. But, ultimately, the interaction of these diverse groups has led to exciting creative innovations within the arts and the sciences.

Both photography and, today, digital photography have shaken us from our blind adherence to particular visual paradigms because they did the unexpected and surpassed the capability of current tools to re-present visions of reality, at least from a purely informative standpoint. This presentation examines shifts in language and in informational structures as we assimilate the computer into our everyday lives as a vehicle for communication and artistic expression.

A WOMB OF HIS OWN:
DIEGO RIVERA, FRIDA KAHLO AND THE COLLABORATIVE BODY SHOP

Hugh Culik
University of Detroit Mercy

Gender is central to the art of both Frida Kahlo and Diego Rivera. It became central during their sojourn in Detroit where Rivera was completing the frescoes now considered among the most important of his career. Their stay in Detroit was plagued by homesickness, the death of Kahlo's mother, and the miscarriage of the first pregnancy Kahlo had decided not to abort. Out of her loss - and at the urging of Rivera - she began her project of making a painting for each year of her life. Her self-portraits often are images of birth, the female body, and of her physical suffering. This work is the basis of her reputation as one of the century's great experimental painters.

Conception, birth, gender, and loss pervade not only Kahlo's work, but also Rivera's frescoes at the Detroit Institute of Arts and those at the Rockefeller Center (destroyed because Rivera inserted a portrait of Lenin). Traditionally, Rivera's work is understood as a manifestation of his Marxism, but Rivera's transformations of ideology connect to his notions about gender and creativity, connections worked out in the collaborative career/marriage with Kahlo. I begin by asking:

1. How Rivera "genders" creativity, especially men's ancillary role in the creation of children.

2. How Rivera's gendering of creativity in the frescoes recapitulates his and Kahlo's procreative life.

3. How his attempts to contravene the binaries of male/female, production/reproduction, process/product arise through images of hermaphroditic, pre-genital states.

4. How the rhythmic subversions and re-inscriptions of gender perpetuate the processes of creativity and avoid loss.

The parallels between the stillborn children Rivera and Kahlo produce and the self-destructive insemination of Marxist imagery into his American murals emerge through the imagery of the hermaphroditic idyll where sexual differentiation exacts no toll, the idyllic state to which creation aspires. Sexual codings can intrude on the creative process, but for Rivera and Kahlo the codings mediate between the dynamic of the creative process andits expression as a static product. They preserve the dynamic nature of creative process -- be it biological or artistic -- by entering the static artistic product into destructive relationships that paradoxically return the creative work to a dynamic process of re-creation.

"The Truth Itself": How Whitman, Hawthorne, and Agassiz Employed the Daguerreotype as Scientific Proof"

Stephen Hartnett, Ball State University Department of Speech Communication

Edgar Allan Poe, in a flurry of hyperbolic excitement, claimed in 1840 that "The closest scrutiny of the photogenic drawing discloses only a more absolute truth, a more perfect identity of aspect with the thing represented. The variations of shade, and the gradations of both linear and aerial perspective are those of *the truth itself.*" This may strike contemporary, image-saturated readers as a curious claim, yet in studying the cultural history of the daguerreotype it becomes clear that many mid-Nineteenth Century Americans viewed the daguerreotype as a strange and revelatory science that somehow transcended mere representational clarity. For example, in Hawthorne's scathing indictment of America's increasing fascination with capitalist relations of domination, The House of the Seven Gables (1851), Holgrave, the cynical daguerreotypist, boasts/threatens that his "science" is capable of "bringing out the secret character with a truth that no painter would ever venture upon." In a similar vein, the cover of Whitman's incendiary 1855 Leaves of Grass offers its readers, instead of the traditional printing of the author's name, an engraving of a daguerreotype taken in 1854 by Gabriel Harrison. Whitman clearly employed this strategy so that the trace of conscious artistic decisions from the actual man, Walter Whitman, to the poem's author, Walt Whitman, to the poem's heroic, unnamed persona, would collapse in a blast of pre-representational immediacy and "truth" given visible proof on the cover's daguerreotype. It is a tribute to Whitman's understanding of his culture's fascination with the daguerreotype that one of the first reviews of his work notes that "the portrait affords an idea of *the essential being* from whom these utterances proceed." It is clear, then, that both Hawthorne and Whitman not only recognized the ability of the daguerreotype to function as proof of what Poe called "the truth itself," but that they both manipulated this "proof" to substantiate their literary critiques of early American modernity.

One of the obvious paradoxes of this fascination with images that convey both "the truth itself" and the "essential being" of the image's subject, is that these supposedly "true" images are in fact the product of a series of complicated artistic decisions – the mid-Nineteenth Century daguerreotype-consuming public, however, not yet armed with the myriad forms of critical semiotic abilities that we take for granted today, was highly susceptible to such complicated image-based trickery. Indeed, given the fact that much of the culture was literally amazed by the daguerreotype's strange science of image reproduction (and was consuming daguerreotypes as one of the era's major commodity fads) it comes as no surprise that Louis Agassiz, one of the era's leading proponents of eugenics-based defenses of slavery, employed J.T. Zealey, a South Carolina daguerreotypist, to provide him with a series of close-up images of naked slaves to be incorporated into Agassiz's "research." Specifically, the stark physical "otherness" conveyed in Zealey's daguerreotypes was intended to reinforce the racial stereotypes held by so many mid-Century Americans. For Aggasiz and his cohorts in the early eugenics movement, then, the daguerreotype was an essential tool in supporting pre-existing notions of the "truth itself" regarding the capacities of slaves, immigrants, and other social deviants to participate in America's fledgling democracy.

This presentation therefore 1) provides interdisciplinary historical context for the proliferation of the daguerreotype as one of the mid-century's primary examples of the commodification of images of the "self," and 2) analyzes the means by which Whitman, Hawthorne, and Aggasiz employed the daguerreotype as "scientific proof" that corroborated and substantiated their analyses (both literary and scientific) of the status of mid-Nineteenth Century America.

Key Words: Daguerreotype, Eugenics, Modernity, Commodification, Whitman, Hawthorne, Aggasiz.

CRYSTALS, CHARACTER, AND CULTURE: ESSENTIALIST STRUCTURES AS INFORMATIONAL STRUCTURES AND THE REPRESENTATION OF GENDER AND CLASS IN THE IMPRESSIONIST PAINTINGS OF CAMILLE PISSARRO

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Examination of the complex surfaces of Impressionist paintings by Camille Pissarro and discussions of character and theory in Pissarro's published correspondance may reveal the degree to which his representations of peasants and women may have reflected essentialist notions of class and gender in the relationship among nature, character, and culture. If the creative process of selection and representation was believed to recapitulate the process of cultural evolution, how might the artist's representations of peasants and women reflect their characterization in relation to nineteenth century notions of cultural evolution and the ideas of the primitive, progress, and process?

The luminous surfaces of Impressionist paintings constructed with gestures of color in response to deeper structures within culture and creator represent a different order from the brilliance of the diamond released by the jeweler's deft hand as directed by his intuitive understanding of the crystal. The model of the crystal developed in 1784 was absorbed into a seamless world of nineteenth century thought where metaphors were freely transported from the physical and biological to the psychological and cultural. The crystal that represented the universal structure of nature in Proudhon's anarchist philosophy also led to the discovery of the chromosome and the idea of the genome. The parody of the innatist model of the crystal in the contemporary notion of character that linked physiognomy and personality in animal and human corrupted the model when the informational structures of the physical and biological model were replaced by the essentialist ideas of race, gender, class, and temperament in nineteenth century theories of human ethology and social biology. The misrepresentation of sociological practice using observed difference to define identity and justify discrimination as essentialist structures located within the body protected them from public scrutiny as much as the ephemeral nature of these ideas placed them beyond the reach of the scalpel, the microscope, and experiment.

Pissarro's selection of the motifs of nature, peasant, and woman itself may represent the relationship between artist and object defined in terms of gender and class prior to the creation of the art image. Objectivity may be present in a physical description of the painting and a consideration of the artist in relation to his paintings as reflections of a social landscape. Discussion of Pissarro's images and ideas in the context of nineteenth philosophy and science can reveal how Pissarro represented the social prejudices of the nineteenth century as a liberal, male, bourgeois artist while offering a means for going beyond those limitations.

THE APE-MAN IN THE MIRROR: T. S. ELIOT'S SWEENEY POEMS AS A SATIRE OF HUMAN EVOLUTION

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"Apeneck" Sweeney's appearances in T. S. Eliot's "Sweeney Erect," "Mr. Eliot's Sunday Morning Service," "Sweeney Among the Nightingales," The Waste Land, and the unfinished Sweeney Agonistes span almost two decades, from 1917 to the mid-1930's, during which period Eliot established himself as the most influential poet and critic writing in English. Although the fact is less commonly recognized, it was also the period of Eliot's greatest interest in science. His early essays and reviews show him well versed and strongly interested in anthropology, heredity, and evolution, in addition to philosophic variations thereon such as Bergsonism. In this paper, I argue that the Sweeney poems constitute among other things a satirical exploration of the implications of an evolutionary conception of human nature. Eliot was far too literate scientifically to question the *fact* of evolution; instead, his satire aims to make grotesquely clear its inadequacy (from Eliot's point of view) to account for the most important aspects of human nature and experience.

Like most of Eliot's other works of this period, the Sweeney poems depend for their full effect on the complex relations between their surface content and the multiple contexts invoked through allusions. Using "Sweeney Erect" as my primary text, I place the Sweeney poems in the context of contemporary controversies in paleoanthropology (the *Pithecanthropus erectus* and Neandertal fossils, the Piltdown hoax) and in a historical tradition of often racist speculation about the relationships among various human groups and between humans and the anthropoid apes. Among the philosophical and literary sources discussed are Rousseau's Discours sur l'origine de l'inegalité, Poe's "Murders in the Rue Morgue," and Wyndham Lewis's Tarr. The effect of these allusions is to problematize the application of the evolutionary insights of Darwin and Huxley to human nature. Metaphors drawn from evolutionary science and heredity in Eliot's poetry, and more explicit statements in his prose, further exemplify a moralist's skepticism at odds with the optimistic evolutionism of such figures as Spencer, Bergson, Shaw, and H. G. Wells.

In sum, Sweeney's Darwinian world, in which "Birth, and copulation, and death" are "all the facts when you come to brass tacks," was to Eliot a moral wasteland where science has offered us citizenship. He believed we must refuse it to remain fully human. Whether or not we accept the religious alternative toward which Eliot himself was impelled, we should recognize in the Sweeney poems a scientifically literate poet's diagnosis of a characteristically modern problem--the reconciliation of scientific knowledge and human value.

Cyndy Hendershot

"Masculinity and the Darwinian Feminine"

Texas Tech University

By the mid-nineteenth century, the virile Baconian scientist penetrating a feminine nature had been supplanted by a new configuration of science and gender ushered in by Charles Darwin's *On The Origin of Species* (1859). Darwinian theory posed a direct threat to the stable male subject/scientist, figuring him as a signifier in the evolutionary chain rather than as a divinely created, significant master. In the popular imagination of nineteenth-century Britain, what was especially disturbing about Darwin's theories was the notion that the animal within—the sign of the human species' past—threatened to usurp masculine rationality and return man to a state of irrational chaos. Darwin's theory effected no less than a decentering of the human subject, who in nineteenth-century society culturally should embody dominance, rationality, and power. For Bacon's scientist a personified feminine nature could be controlled by the masculine scientist because of divine intervention. The scientist received his ability to penetrate nature from God. Darwinism, however, removed God from the scenario and placed the male scientist in the position of being created by and controlled by a nature still personified as feminine, but a nature which the rational scientist could no longer control.

"SEE HOW THE FATES, THEIR GIFTS ALLOT": THE EMERGENCE OF DARWINIAN SENSIBILITY IN GILBERT & SULLIVAN

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The operettas of Gilbert and Sullivan provide a fascinating view of the cultural influence of evolutionary theory in the 1880s. In characters such as "Point" --from Yeoman of the Guard-- the bitter reality of competition and fitness, as opposed to sentiment and concern, mark, dominate the stage. The audience is left to struggle with the notion that favorites may no longer survive, merely because they are favorites. The issue is well expressed in the song from the Mikado, "See How the Fates, Their Gifts Allot," which asks the audience to remember that the generic individual "A" is happy, though "B" is not; the song continues:

> But "B" is worthier, I dare say
> Of more prosperity than "A."

The purpose of this paper is not merely to tease out the Darwinian question in Gilbert & Sullivan, but to explore the cultural interrelationship of science and literature in its varied expressions.

DARWINIAN SPACE

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Like all histories, historical studies of science reinterpret the past out of their situations and concerns in the present. Modernist approaches to Darwin, for example, have celebrated the evolutionary master narrative that wrested species forms from an unchanging platonic realm and put them thoroughly inside history. The struggle for existence, furthermore, is read as the conflict that provides the motor or "mechanism" that activates the great narratives inscribed in Darwin's nature.

If history can rewrite the past in its own image--modernism producing a modernist Darwin--these reinterpretations also unearth features about the past itself that have previously received little or insufficient attention. In this presentation I will turn from the modernist emphasis upon time to the postmodernist privileging of space, and use this latter as a hermeneutic point of reentry into two of Darwin's key theoretical ideas, the idea of species, and the idea of natural selection. Narratives, including scientific narratives, never simply represent events, they also construct setting and reorganize space. Darwin's idea of species was a forward and backward looking diachronic view; but it was also a synchronic, lateral construction. A Darwinian species was not so much a real entity that gained ontological status through its continuity in time as it was a necessary fiction, a word designating something like a hypothesized statistical average taken from a large group of diverse but related organisms. Rather than a unified being or thing that grew, a species was multiple populations, each in turn made up of populated variations that could be arranged in fine gradations of forms. Whereas organicist historicism posited a mysterious essence that underlay an entity and incorporated surface historical changes into its inner unity, Darwin's populationist idea of species identity is not (theoretically speaking) an identity at all, but multiplicity and difference. A species was a multiplicity distributed across geographical terrain, located and positioning itself in various relations with its own variations and those of other species.

Not organicist, and not only historical, Darwinian form was populationist and spatial. Ecological distribution and connection were crucial to Darwin's theory. His "mechanism" of change, furthermore, might be better construed as a spatial idea of the activity of change rather than a primarily linear, temporal one. It was this synchronic, spatial imagining of the environment as populations in dynamic interaction that characterized Darwin's own interpretation of his idea of natural selection. Darwin indicated a sublime inclusivity of organic activity when he defined the nature of natural selection: in his words, nature was "only the aggregate action and product of many natural laws." Nature at any present moment was both the historical product of events across time ("laws" he defined nominalistically as "the sequence of events as ascertained by us") and the synchronic action and product of all those events in the present. Darwin's nature is geographical, diverse, and global, an idea given meaning only by substituting a sublimely impossible aggregate of interacting populations and their simultaneous activity.

My purpose is not to argue that Darwin was a postmodernist, or even a proto-postmodernist. I do argue that recent theoretical turns away from emphasizing temporality to the privileging of synchronicity and spatiality can provide an important additional perspective on the idea of nature Darwin was actually trying to construct.

Free to be You and Me?: The Prozac Debate

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As Prozac becomes more and more popular as a treatment for dysthimia (mild depression), the media debates its usefulness, safety, and necessity. Some opponents of Prozac (and its SSRI cousins Zoloft and Paxil) claim it is akin to a chemical witches brew with Eli Lilly's pharmacologists stirring a high-tech cauldron as they chant capitalistic ruminations. Pointing to the early use of such psychotropic drugs as LSD, cocaine, and Valium, these Macbethan naysayers emind us that, like Prozac, these drugs were once approved by the FDA, considered non-addictive, and prescribed widely.

Other less reactionary opponents wonder about Prozac's popularity and why our society is so eager to find a panacea. They caution against a "brave new world" in which Huxley's soporific soma has finally been marketed as Prozac. This group tends to beleive we are headed for a detrimental legal drug culture (a view I do not share).

Proponents of Prozac as a widely-prescribed treatment for mild depression dismiss such opposition and highlight the successes many people have enjoyed while taking Prozac. In the media, this view is most often represented by the medical establishment, either in the form of "public awareness campaigns" funded by pharmaceutical companies (i.e., advertisements) or psychiatrists billed as "experts" on depression. Peter Kramer, author of the bestseller Listening to Prozac, has been the most visible of this last group.

The result of all this media attention to the "wonder drug" of the 90s is enormous numbers of people taking Prozac and even larger numbers talking about it. Virtually every major newspaper and magazine in the country has carried multiple stories recounting the debate laid out briefly above. How are we to account for this phenomenon and why should we care?

While the debate rages on--to use or not to use--no one seems to be addressing the substantive and historically-grounded questions we should be examining. What is at stake in defining depression as a primarily bio-neuro-chemical disorder rather than a psychological one? Who stands to gain through such a redefinition? Who suffers? What are the ramifications of putting dysthimia on a continuum with manic depression or schizophrenia (for which older anti-depressants were used)? Again, who gains and who loses? What does it mean that 80% of those taking Prozac are women? Only by addressing these types of questions can we properly understand what I term the "Prozac Boom" and make well-considered judgments about its use.

This paper utilizes a Foucauldian theoretical apparatus in conjunction with various feminist critques of the pathologization of women in order to attempt such an understanding. I argue that, while SSRIs are useful drugs for a debilitating disease and represent real progress in the treatment of some forms of depression, we should be more rigorous in our approval of its use. I do not argue that Prozac should be banned, nor am I concerned with governmental regulation of such drugs. Rather, it is Prozac's cultural approval with which I am concerned. I do not subscribe to medical conspiracy theories, but see too many possibilities for the detrimental use of Prozac, especially for historically disempowered groups.

WHAT'S BORNE IN THE BODY:
William, Henry, and Alice James and the Mystery of Psychosomatic Illness

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The latter nineteenth century, when the James siblings reached maturity, was a period in which a variety of new medical and psychological theories, health fads, and quasi-religious pseudo-sciences were zealously disseminated in the U.S. and Europe. Hysteria, neurasthenia, psychosomatic paralysis, catatonia, and other dramatic afflictions of dubious origin, most frequently manifested in middle- to upper-class women, spawned several generations of therapeutic experimentation and extravagant cure claims. Certain chronic illnesses became associated not only with social status, but with desirable qualities of character.

Medical historians like Edward Shorter in From Paralysis to Fatigue have copiously documented the proliferation of body-mind theories during this period. Scholars have commented on mythologies of illness in Henry James' novels, have recognized William's often startlingly original synthesis of current medical and psychological theories, and have scrutinized the diaries of Alice James in relation to the writings of Charlotte Perkins Gilman and other contemporaries for some understanding of how women who suffered from psychosomatic illnesses understood their conditions and their social ramifications.

There is good reason to consider the work of the three siblings together with respect to their understanding of the body-mind relationship and the causes of psychosomatic illness. One of the most remarkable families in American history for intelligence, scope of achievement, and influence, the Jameses were in intimate personal and intellectual contact throughout their lives. Their ideas grew out of a rich soil of family dialogue. Though capable of vigorous argument, they shared similar habits of mind and the ambiguous heritage of their father's articulate Swedenborgian mysticism. All struggled with recurrent medical problems ranging from mild, in Henry, to severe and ultimately terminal in Alice. Their highly self-conscious reflections on the body-mind relation, and on possible relationships between forms of illness and character, offer a multi-dimensional view of a medical-psychological-cultural issue that defies simple classification.

The work of the Jameses may still be helpful in attempting to understand the socially constructed dimensions of illness, some of the ways in which it may be related to personal psychology and to particular cultural myths and predispositions. In this talk I will offer some observations on each of the siblings' perspectives on mind-body issues as follows: 1) William on health, sanity and salvation; 2) Henry on character and consciousness; and 3) Alice as insurrectionary invalid. Ongoing contemporary speculation and study of psychosomatic illness may still have much to learn from the introspective intelligence they applied in their respective ways to this problem, which they viewed within related but quite distinct frames of reference.

Gender, Neuropsychology, and Aesthetics

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Edmund Burke's A Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful builds on dichotomous and gendered notions of aesthetics not only in its discussions of aesthetic objects, but also through its implicit assumptions about gender and the creativity. Gender biases are imbedded in later eighteenth-century belles lettres and in traditional readings of romantic literature, particularly the distinction between "passion" and "sentimentality." Modernist aesthetics, arguably, reject sentimentality out of hand and, though various postmodern critical theories problematize and undermine these gendered presuppositions, an aversion to "feminine feeling" still seems still to have cultural currency within the academy. This gender bias within the realm of the aesthetic may be described as an issue of "style," and as such is reinscribed by various current approaches to writing and criticism.

The relationship between "aesthetics" and "psychology" predates Aristotle's Poetics and the idea of style as a cognitive or limbic process is a commonplace for contemporary rhetoricians and critical theorists. Research in the field of neuropsychology examines gender differences in psychological processes on an ongoing basis, and these findings have the potential to either consolidate or complicate various theoretical and political stances within English studies.

In the field of neuropsychology cognitive and limbic processes are often researched and reported in terms of competency or fitness to particular tasks. Neuropsychological study emphasizes competence/fitness because 1) it tends to examine performance on isolated, de-contextualized tasks in which success or failure can be readily measured, and 2) it often deduces psychological behaviors and structures from pathologies (exceptional cases such as aphasia from massive head injuries or genetic "deviations from the norm"). This idea of "fitness" plays much the same role in the rhetoric of neuropsychology as the notion of "style" plays in the rhetoric of literary criticism: it reinscribes evaluative and gendered standards of cognitive and limbic behavior, and can be used to legitimate generalizations about "essential" psychological differences between women and men.

A close reading of some recent work in the field of neuropsychology, however, may destabilize such "essential" differences. By juxtaposing genetic ambiguity, statistical uncertainty, the fluid dynamics of hormones and brain structure with the evolutionary meta-narratives which sustain research into sex or gender differences in neuropsychology, we can begin to deconstruct the category of sex in this scientific/social-scientific field and, perhaps, release some additional "traces" of gender bias within our own.

PROSTHETIC EMOTIONS

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One of the commonly accepted views of technological development is that of technology as an increasingly elaborated regime of tools and machines, or prostheses, that extend and amplify the capabilities of the human being in terms of power, sensory functions, and computational problem-solving. To a great extent this narrative is based on an ideology of progress defined in terms of increases in efficiency and productivity--in short, rationality.

Over the long history of Western culture, rationality has generally been contrasted with emotion; of the two terms, reason has been accorded positive value and emotion has been considered a potential pathogen. In this paper I argue that in science fiction literature and film ranging from Mary Shelley's Frankenstein and Frank Baum's Wizard of Oz to Philip K. Dick's Blade Runner, Arthur C. Clarke's 2001 (as well as the other two books in the Odyssey trilogy), and Star Trek: Generations we find both a complementary and counternarrative to that of technological development as one of increasing rationality. The Tin Woodman in The Wizard of Oz yearns for a heart; the hyperrational member of the crew in Star Trek: Generations requests that an "emotion chip" be implanted in his brain; by the end of Clarke's trilogy we are certain that the computer known as Hal, which we once suspected of harboring malevolent impulses toward human beings, possesses altogether sympathetic emotions--that is, a warm heart. I call these imaginary extensions of the capacity for emotion to technological artifacts "emotional prostheses." They are analogous to the extension of the capabilities of the body through technological prostheses such as the lever, the hearing aid, and the computer. We are, I argue, witnessing an explosion of "prosthetic emotions."

How do we read the politics of this attribution of the emotions to machines in late twentieth-century technoculture? Historian of the emotions Peter N. Stearns argues in American Cool: Constructing a Twentieth-Century Emotional Style that one of the keys to the development of consumer culture in the U.S. is the socialization of people to invest emotionally in objects rather than in people. In addition, I argue that the representation of technology as possessing emotions--the computer is the prime example--serves in the long run to facilitate our accomodation to technology; it is also an index of the general recuperation of the emotions as positive that we are seeing today in a wide variety of domains (on the salutory role of the emotions in terms of evolution, see Antonio R. Damasio's Descartes' Error: Emotion, Reason, and the Human Brain and Robert Wright's The Moral Animal). This attribution of emotions to machines corresponds to the psychoanalytic logic of projection just as the attribution to ourselves of suprarationality corresponds to the logic of introjection.

Donna Haraway has argued that postmodern culture is characterized by a blurring of boundaries between different forms, particularly in the hybrid of the organic and technological known as the cyborg. Her specific interest is in the breakdown of gender boundaries as it serves feminism. From my perspective of the prosthetic emotions, I read the ascription of the emotions to machines--now understood more complexly as cyborgs in great part because of the very ascription of emotions to human-made devices--as part of a general tendency toward the homogenization of the artifactual and the organic in late twentieth-century technoculture.

PLOTTING THE PARANOID TEXT: CONSPIRACY AND COMMUNICATION IN SORRY, WRONG NUMBER

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The metaphors of networks and webs often associated with telecommunications technology (and especially the notions of entanglement that those metaphors evoke) lend themselves easily to paranoid thinking (as seen, for example, in the memoirs of Daniel Paul Schreber) and what has been called (most famously by Richard Hofstadter) the "paranoid style." Furthermore, the machinations and weavings of fictional (and even nonfictional) narration can lend themselves as well to such a style. As Louis Mackey writes about Thomas Pynchon, "the interlacings and interfacings of the plots in the fictional sense . . . are repeatedly . . . confused with Plot in the sense that only a paranoid would understand."

This paper will weave together the webs of telecommunications, paranoia, and narrative to examine an exemplary text of what I call "paranoid narration": the film Sorry, Wrong Number (1948). This film, directed by Anatole Litvak and scripted by Lucy Fletcher (as an adaptation of her radio play), stars Barbara Stanwyck as a woman suffering from a psychosomatic condition that leaves her bedridden. At the beginning of the film, she overhears a phone conversation between two men plotting a murder. The plot of the film depicts her attempt to report that murder plot as well as to contact her elusive husband; but it turns out that she is the intended victim of the plot which has been orchestrated by her husband. The plot of the film becomes not just confused with the murder plot, it becomes indistinguishable from it as Stanwyck's character becomes the victim of both plots.

The film's narrative is structured by 17 diegetic telephone conversations (plus two more in flashbacks within a conversation). Telephone technology, then, not only allows information to be transferred and received; it also helps construct the world of the filmic narrative, organizing information into a paranoid form of narration that goes beyond merely depicting a paranoid person. This example provides a unique view into the workings of this narrative structure, since the work began as a 20 minute radio play and, after a novelization, was then expanded to an 89 minute film. I pay special attention to the way plots are stretched and entangled across media to develop narrative worlds that intersect with, and even collapse upon, each other.

REVOLUTION ON THE BORDER BETWEEN EMOTION AND COGNITION: FREUD'S "RAT MAN" AND THE X-FILES

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We commonly presume and accept a border between emotion and cognition: tied to sensation, irrationality, and often femininity, emotion is a state separate from that by which cognition is defined. But what if we transform this belief? What if, instead, we perceive a revolution on the border between these two states?

Jonathan Edwards's 1746 tract Religious Affections suggested such a "revolution." In this impassioned work, he continually stresses the interrelations between "understanding" and the "affections," between the mind and the body, and (akin, but not identical to, Freud's studies of ambivalence) between such emotions as love and hate. The relation between certain emotions (like love and hate) is based on their mutual transformative natures. One emotion can easily become another. This transformative nature is inherent in the "affections," as there emotions are defined precisely by movement. As Noel Carroll points out, "An emotion originally was a moving out. To be in an emotional state involves the experience of a transition or migration - a change of state. . ." (The Philosophy of Horror).

While this movement may signal a change from one emotional state to another, it might also, as I indicated above, signal the transformation from an emotional to a cognitive state (and vice versa). These latter types of movement are evident in the work of Freud and, I would posit, the television series The X-Files. Certainly the process of working through unconscious material in order to perceive its meaning in the conscious state is integral to the project of psychoanalysis. For Freud, this process of "discovery" is further connected to his obsession with knowledge, or the "truth." Often, however, this process is in vain; one can never fully know the truth. This inability to know in turn produces a sense of anxiety in Freud's work, indicating a link between emotion and the desire to know. Freud writes about such a desire in "Notes Upon a Case of Obsessional Neurosis" (a.k.a. the "Rat Man Case"). For the Rat Man, uncertainty and anxiety are inextricably linked in the pathology of "epistemophilia": in this extreme case, emotion is always tied to cognition.

Extremes, of course, can be telling. For example, both anxiety and its concurrent obsession for knowing have been described in relation to television viewing and television texts. Meaghan Morris tells a story about the coverage of a catastrophic event in Australia when the audience was left with a paucity of details: "So people panicked, and waited anxiously for details. But the catastrophe was that there was no information" (Logics of Television, 17). The X-Files deals precisely with this danger both structurally and narratively. In each episode, the main characters (FBI agents) attempt to explain inexplicable (and usually horrifying) phenomena - that which cannot be defined by science or nature. The series, then, deals not just with a fear of the unknown, but with a fear of the known as well (for the unknown weekly transforms into the known). And as the unknown becomes known, anxiety and fear might also be transformed into certainty, or trust. Indeed, the potential of fear to revolve into trust indicates its position as a kind of "border state" between emotion and cognition, as it straddles both at once.

Freud and the agents on The X-Files, in a sense, both trust the unknown. On the one hand, they trust that the unknown (that which produces both fear and anxiety) has the possibility of being transformed into the known. On the other hand, in spite of the fact that such a thought may itself produce anxiety, they also trust in the certainty that the unknown will remain the unknown. Thus founded through the relation between anxiety and knowledge, the fact that these two beliefs coexist is indicative of the revolving states of emotion and cognition. These revolving states, in turn, may lead to further reconsiderations of divisions between those characteristics wich define emotion and cognition in contemporary culture.

"FIRST, YOU CRY:" COMING OUT STORIES AND THE EMOTIONAL POLITICS OF BREAST CANCER

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In this essay I will explore the politics of breast cancer through the shifts in emotional response to the disease that have occurred culturally over the last two decades, both within the medical community and communities of patients. Breast cancer narratives often shed immense light on how those with cancer cope with pain and grief; virtually all the women grieve over the loss of a highly-personalized body part. But perhaps one of the most inspiring effects of these narratives is the way in which they teach anger towards a health care system which seems to inadequately respond to the basic emotional needs of a growing number of women. Narratives of breast cancer mastectomies enable post-operative patients to cope with a cultural environment in which they no longer feel complete. For many women, their emotional reactions to the disease provide a means by which they can regain a sense of self-control and personally engage a system of institutionalized standards which they believe has contributed to their alienation.

Biographies and personal narratives written by women who have survived mastectomies suggest--contrary to Foucault's claim that the practice of confession is disempowering to the one who confesses--that the telling of their story enables these women to re-negotiate a position for themselves within their cultural environment. Frequently, these stories serve as a "how to" guide for other women and their families. Thus, whether intentional or not, the authors of these narratives are repositioned as survivors, as proof that other people also have been through this. These stories are not clearly aimed at helping others find a way through their own crises, a crisis that each of the women have themselves been through. Rather they are aimed at educating the reader through experience in how to deal with doctors and medical technicians who can't understand how women might feel under certain circumstances: they educate about ways to negotiate health care bureaucracy, treatment programs, surgical decision-making, recovery options. In effect, they serve to better educate the readers in how to combat "officialdom" or, put more optimistically, they serve as anti-establishment conduct manuals because they often depict the lives of respectable, affluent women who are firmly positioned within an accepted social structure as behaving in ways that severely undercut the status quo their lifestyles seem to encourage.

Session Abstract

REFLECTIVE SCIENCE WRITING

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"Reflective" science writing is writing by scientists who address nonspecialists in prose styles that reveal recognizable "literary" qualities, differing in this way from the writing of scientists for other scientists. Such writing can cross disciplinary boundaries and form a bridge between the "two cultures." The four contributors to this session discuss reflective writing from their different perspectives. Peter Brown gives an overview of how scientists write for non-scientists. Jeffrey Sturges critically addresses reflective science writing within literary conventions such as those of the personal essay. K. C. Cole analyzes literary tools, and the complex relationship between truth and clarity, in science writing. Sidney Perkowitz discusses reflective science writing as seen by a practicing scientist-writer. Their presentations will be followed by open discussion among contributors and audience.

Session Contributors

Peter Brown
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Sidney Perkowitz

Jeffrey Sturges

TELLING IT LIKE IT IS: PERSPECTIVES ON WRITING ABOUT SCIENCE FOR NONSCIENTISTS

Peter G. Brown
Editor in Chief, *The Sciences*

Science writing is regarded by its practitioners as a largely benign and unproblematic activity with substantial economic implications for some writers, editors and publishers. It serves the reading public as a popular entertainment and as a literary form whose cultural significance is certainly less than modern fiction and probably greater these days than serial music. It serves the scientific community, in part, as a public relations vehicle and, in part, as a form of continuing and even cross-disciplinary education for nonspecialists.

Because the reader is not held captive by impending examination, as is the student; nor held in check by physical circumstances from immediate flight, as is the film or concert audience; nor bound by professional obligation, as is the reader of a technical journal, the writer of popular science must be at pains to grab and hold her readers. That transaction between writer and reader imposes certain demands on the writer, in particular that the writer work with an understanding of why the readers care to read about science.

I suggest: (1) Readers care because science purports to be about the world as it is, a true description of reality. (2) They care because the scientific description of the world defines the possibilities of action in the world (thus, technology); and it also carries with it an invitation to the reader to participate, at least vicariously, in the scientific quest (thus, scientific knowledge is ideally, in the Baconian sense, open and, in principle, accessible to everyone). (3) They care because of the intellectual adventure story of *how* other minds have found out about the world. As Einstein put the matter to Leopold Infeld concerning their book *Evolution of Physics*: "It should be a drama--a drama of ideas."

Such expectations on the part of readers raise a number of traditional philosophical problems in a particularly poignant way: problems of ontology, of conceptual change and concept translation across incommensurate world views, of the role of metaphor and analogy in epistemology, and so forth. Thus, as I hope to persuade you, popular science writing is a particularly fecund kind of discourse, within which many issues of interest to literary theorists, discourse analysts and philosophers of science can be posed and discussed.

Science Writing and Complementarity

K. C. Cole
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Physicist Frank Oppenheimer liked to describe artists and scientists as the "official noticers" of society. Both make observations, and then try to communicate their insights to a broader culture. Literary writing in the sciences plays much the same role. It seeks to present, explain, relate, turn over, and examine science, looking for connections between science and art, science and human experience, one field of science and the next. To do so requires a wide range of literary tools, including metaphor, simile, story-telling analogy, fantasy, character development and description, each of which comes with its own inherent set of pitfalls. Like artists, science writers sometimes have to live with approximations that focus on the Big Picture while fudging on the details. Physicist Victor Weisskopf called this "lying to tell the truth." Niels Bohr put the same thought somewhat differently, when he said there is a complementary relationship between truth. and clarity. Either way, the art comes in knowing when it is time to sacrifice the one for the other.

REFLECTIVE SCIENCE WRITING

Jeffrey Sturges
Department of English
UC - Santa Barbara

The "reflective" writing of recent and contemporary scientists such as Loren Eiseley, Lewis Thomas, Stephen Jay Gould, and Oliver Sacks challenges the normally accepted boundaries partitioning science from art. In their efforts to inform, as well as move and delight, lay readers, these writers employ prose styles which generally reveal more recognizably "literary" qualities than does the formal, systematic, and impersonal writing typically associated with the research report or scientific article published in professional journals. Yet the genre represents more than a hybrid of professional scientific communication and artistic literary production. I propose that the pedagogic, moral, and aesthetic objectives of reflective science writing find their most congenial mode of representation within the generic conventions of the informal, personal, or "Montaignesque" essay. As they evince a concomitant epistemology, these conventions allow a range of movement between "subjective" experience and reflection and "objective" reporting and analysis, enabling the science writer to span the distance that otherwise appears to separate literary from scientific discourse. I suggest that reflective science writing approximates a mode of composition logically antecedent to that of both artistic literary production and formal scientific discourse. That is, the essayistic conventions may themselves be informed by an approach to knowledge and writing out of which the broader generic categories of literature and formal scientific discourse emerge and diverge. Viewing reflective science writing as participating in this "ancestral" mode of discourse has practical, as well as conceptual, significance: I propose pedagogical applications for the study of the genre which should help undergraduate students in various disciplines who are struggling to master academic discourse understand how subjective experience and personal reflection, objective analysis and knowledge of academic conventions can negotiate with and accommodate one another.

Changing Quantum Physics into an Essay: Can it be Done?

Sidney Perkowitz
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"Science writing" has different meanings for different sciences. Some carry human meaning that provides a framework on which to hang the science and supports "reflective" qualities. In his *New Yorker* piece "To See or Not to See", the neurologist Oliver Sacks relates the true story of a man who regained his vision after decades of blindness, but found the supposed miracle to be a curse. The tale grips through its inherent drama, while telling us about the science of vision, and about Sacks himself. In other sciences, the reflective connections are not obvious. The strange contradictions of quantum physics, for instance, are foreign to human experience. In his *QED* and *Feynman Lectures on Physics*, the Nobel Laureate Richard Feynman has written about these mysteries, but with few subjective overtones. On the other hand, in *Surely You're Joking, Mr. Feynman* and *What do YOU Care What Other People Think*, he has described his life in science but without conveying quantum ideas. I discuss the problem of combining the personal and the literary with the abstract, by examining the works of Sacks, Feynman, and my own writing for non-scientists.

Friday, November 3, 4:45-6:15 PM

A. The Normative Discourse of Health **Metro**
Andrew McMurry, organizer and chair

- David Cassuto: "Healing the Land: Mary Austin and the Logic of Reclamation"
- Andrew McMurry: "'The Health of Human Culture': Wendell Berry's Agro-poetic Revision of Robert Frost"
- William Major: "Challenging the Discourse of Biomedicine: Anatole Broyard and Audre Lorde"
- Roddey Reid: "Healthy Families, Healthy Bodies: The Politics of Speech and Expertise in the California Anti-Second Hand Smoke Campaign"

B. Technology and Narrative **Bel-Air Patio**
Joe Tabbi, organizer and chair

- Joe Tabbi & Michael Wutz: "Technology and 20th-Century Narrative"
- Geoffrey Winthrop-Young: "Mann's Magic Media: A Case Study in Literature and Media Change"
- Linda Brigham: "Our Bodies, Our Selves: Activating the Percept in Virilio and Robbe-Grillet"
- John Johnston: "Mediality in *Vineland* and *Neuromancer*"

C. Internet Communities **Canyon(HI)**
Paolo A. Gardinali, organizer and chair; Bob Nideffer, commentator

- Paolo A. Gardinali: "Discipline and Punish in the Cyberspace: Usenet Sanctioning and Social Control"
- Joann Eisberg: "High Energy and Hypertext: or If Electronic Publication Brings Democracy to Physics, What Else Comes Too?"
- Wayne Miller: "Professional Exchange in the Age of Chaos"

D. The Birds and the Bees **Pavilion**
Leonard Koos, chair

- Stephen Germic: "Early Ornithology and Racial Mobility: Anxieties of Becoming Ethnic in 19th Century Science and Literature"
- Yvonne Noble: "Rex, the Microscope, and the Construction of the Female Body: Honeybees in the 17th and 18th Centuries"

E. S-F and Fantasy **Westwood(HI)**
Stephen Ogden, chair

- Subhash C. Kak: "Strange Echoes: Parallel Imaginations in Old Indian Literature and Modern Physics"
- Donald J. McGraw: "Where Men and Microbes Met: Tale the First: 'Plot'" (a short story)
- Frances D. Louis: "Acknowledging the Tiger: Savaging Science and Society in *Gulliver's Travels*, *The Stars My Destination* and *Roderick*"
- Elmar Schenkel: "Anti-Gravity: Matter and the Imagination at the End of the 19th Century"

F. The Future of Literature and Science--A Presidential Forum **Summit**
Lance Schachterle, moderator

- Lance Schachterle: "How We Got to Ten Years (Plus) at SLS"
- Stephen J. Weininger: "Where Do Scientists Fit Into SLS?"
- Mark Greenberg: "Reorienting the Practice of Literature and Science"
- James J. Bono: "History of Science and the Future of Literature and Science"
- N. Katherine Hayles: "Creating a Canon: Consolidating the Cultural Studies of Science"

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Healing the Land: Mary Austin and the Logic of Reclamation

David Cassuto, University of Missouri, Rolla

The ecological health of the southwestern ecosystem has always pivoted on the availability of water. Reclamation, the notion that the desert needed to be saved (read "hydrated" and sown with crops) from itself and "reclaimed" for the human race, is predicated on human sovereignty over nature; the dominance of the technosphere over the ecosphere. Land without sufficient water cannot fuel commerce while water that does not in some way increase the land's productive capacity is "wasted." Without human intervention, the sere land would continue to decline, presaging an inevitable ecosystemic collapse. Enter the Bureau of Reclamation, a state-sponsered curative apparatus. According to reclamation dogma, Americans must maximize the commercial viability of their arid land, "healing" them from their unproductivity.

Mary Austin's *The Ford* offers an excellent look at the tensions between ecological awareness and an extractive economy. A fictionalized version of Los Angeles' illicit appropriation of the Owens River from the Owens Valley, the novel presents the conflict between urban and rural interpretations of conservation. Austin, who lived in the Owens Valley at the time of the aqueduct controversy, decried the "theft" of the water and the disregard for the land's integrity that such a maneuver entailed. Yet, she fully supported the valley's desire to dam the river and divert the water to agriculture. The conflict, as Austin saw it, lay in which use of the land and water was more ethical (in the sense of the ethical system which created the Myth of the Garden), not whether the ecosystem be left intact. Drawing on the work of Jean Baudrillard, I argue that the collision between Austin's proto-environmentalism and her allegiance to the progressive agenda demonstrates a lack of coherent alternatives within an extractive relationship to nature. Mired in an all-encompossing extractive cosmology, Austin's dilemma allows an excellent view of the inchoate glimmerings of environmentalism as well as the ideology that fueled the Reclamation Era.

"The Health of Human Culture": Wendell Berry's Agro-poetic Revision of Robert Frost

Andrew McMurry, Indiana University, Bloomington

"Health" is a powerful and compelling metaphor in a variety of discursive fields. "Health" relates to the homeostatic tendency of many systems, the normative "set-point" that obtains in physiological, mental and emotional states--hence its rhetorical force as medical signifier--but as well in economies, ecosystems, social organizations, and the "body politic" itself. Promoting, maintaining or designing "healthy" systems seems an unalloyed good, a fundamental organizing principle in everything from preventative medicine to building design and habitat reconstruction: "Health," it is safe to say, is what everybody wants--but specifying the criteria for a healthful system is no easy project. This paper draws on the work of sociologists Will Wright and Niklas Luhmann, economists Herman Daly and Kenneth Boulding, and the theory of autopoiesis described by Francisco Varela and Humberto Maturana, in an effort to understand the notions of "health" at play in the poetry of Robert Frost and Wendell Berry.

My discussion begins by first establishing the contours and sources of Frost's agro-economic philosophy as a farmer in turn of the century New Hampshire. Frost's little-known writings about poultry farming (collected in *Robert Frost: Farm Poultry-man*), in addition to a brief discussion of the ecological and economic conditions of this region and period, provide the context in which to discern the thrust of many of his early poems--that farm life is impermanent, exhausted, ailing, and doomed. Embedded in a social and economic formation that equated progress with growth in all areas of life, Frost could imagine but two responses, neither satisfying, to the farm crisis: pathological expansion of production, or the "reckless choice" of fruitlessly trying to escape "somewhere."

Berry undertakes his salubrious revision of Frost at the level of local community. Berry's pastoralism is informed by an economic paradigm that draws on Jeffersonian principles of self-sufficiency and holistic approaches to healthful living; he holds out for what Daly calls a "steady-state" economy. Poems such as "Travelling at Home" (a loose rewriting of Frost's "The Road Not Taken") demonstrate that care of self and community are reciprocally dependent, both deriving from the lived, embodied experience of place. The key to sustainable economy is in staying put, not restlessly and rootlessly seeking escape, for the "extra-vagant" gesture of Frost merely replicates the (il)logic of the malignant linear growth economy and, indeed, extends it to other parts of the world. "What I stand for is what I stand on," as Berry says.

Challenging the Discourse of Biomedicine: Anatole Broyard and Audre Lorde

William Major
Indiana University

In this paper I examine the social nature of illness by investigating the pathographies of Anatole Broyard and Audre Lorde, *Intoxicated By My Illness* (1992) and *The Cancer Journals* (1980), respectively. The illness narrative--variously called pathography and autopathography--is a profound investigation of the illness/health split so important to Western culture, and the narrative act as a type of metaphysical project--the urge toward overarching meaning--may be an inescapable maneuver given the contingencies of the illness experience. Indeed, my paper will focus on the relationship, or lack thereof, between the narrative or humanistic response to illness and the discourse of biomedicine in which the subject becomes the patient; in which the healthy are transformed into the ill; in which culture codifies difference as a fundamental framework for conceiving objective scientific truth.

Anatole Broyard and Audre Lorde have radically different responses to their immersion in biomedicine. Broyard strives for a romantic, emancipative relation to normative discourse and practice--which is to say that in order for him to achieve the heightened awareness of the liberal self, not only does he need his illness, but he requires the ideological barrier of biomedicine against which he can define himself as liberated romantic hero. Offering a micro-scientific response to a larger personal and social condition, the biomedical model of care fails for Broyard as it reduces the complete illness milieu to the specialized realm of mere disease. Audre Lorde questions the politics of chronic illness in a profit economy that seeks to nullify positive connotations of difference by maintaining the cultural stereotype of disease as other. According to Lorde, the work of othering that is theoretically the natural consequence of the illness experience constructs both a hierarchy of subject positions and the cultural category "them," the subordinate term in the "us/them" dichotomy. For the black lesbian feminist, the pursuit of an aesthetic model of subjectivity (Broyard's) that privileges consciousness as the kernel of identity is far less important than demystifying and negating the silencing work of patriarchy. This paper will examine the disparity between the overtly aesthetic and the fundamentally political models of identity and their relation to the work of biomedicine.

Healthy Families, Healthy Bodies:
The Politics of Speech and Expertise in the California Anti-Second Hand Smoke Campaign

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This paper will examine visual and audio texts drawn from the recent California anti-second-hand smoke campaign that over the last 6 years. This campaign has been widely viewed as not only setting the tone for public speech concerning the effects of tobacco smoke but also establishing a model for public health discourse. I will analyze the manner in which this highly effective campaign, by virtue of a presumably neutral discourse of "health," inscribes what counts as expertise, health, and normal in the public arena, authorizes or invalidates speaking subjects, and operates as a technology of subjectivity and the social that individuates and operates upon bodies so as to refigure the self in relation to a reinvented social body (in terms of gender, class, and race). These norms and forms of expertise are none other than those of the middle class and its "healthy" body (whose genealogy, as Foucault pointed out long ago, stretches back to the beginnings of public health and populationist (natalist) movements in the 18th century). Now, as then, the "healthy" middle-class body stands in normative relation to all social others and underwrites public order and an imagined community.

I will also show how in the California anti-second-hand smoke campaign these norms of health are promulgated through the trope of "family" whereby the burden of public scrutiny and disciplining is handed over to the finer, more informal networks of private life that are presumably controlled by fantasized family/household relations. I argue that therein lies some of the reasons for the ads' "success" and helps explain the consolidation of the present-day consensus concerning smoking in the US. Just who gets to speak (which subjects, what kind of subjectivity), when, with what authority, and to whose advantage are some of the many stakes at issue in the visual and audio narratives produced by a private advertising agency under contract to the Department of Health Services of the State of California. And as it turns out, the subjectivity of the "smoker" is all but erased from the many acts of speech and knowledge that organize the Public Service Announcements.

This paper represents an extension into the US context of earlier work I published in the form of a book titled, Families in Jeopardy: Regulating the Social Body in France, 1750-1910 (Stanford, 1993).

MANN'S MAGIC MEDIA: A CASE STUDY IN LITERATURE AND MEDIA CHANGE

Geoffrey Winthrop-Young
University of British Columbia

Thomas Mann's novel "The Magic Mountain" is a 1000-page farewell present to the world of print. It recapitulates the demotion of books brought about by the differentiation of visual and acoustic data streams in the 19th century; it comments on the move from symbolic mediation to the recording of physical effects; it points out how these media changes have affected the cultural construction of minds and bodies; and it does so by talking at great length about sex and information.

But the novel does not merely react to technological change. It is part of an ongoing project --- other famous examples include "Dracula", "Kim", or "The Count of Monte-Cristo" --- to capture the vision of newly emergent media forms which had yet to be fully incorporated into cultural practises. Under the guise of fiction literature opens up a space in which the social role and the potential of media are discusssed by expressing what those technologies will, can or might do. Drawing on what some critics have called German "media discourse analysis" (e.g., the works of Kittler, Bolz and Horisch), the talk will present Mann's novel as a prime example of the social contextualization of post-print media by print-bound literature.

DISCIPLINE AND PUNISH IN THE CYBERSPACE: USENET SANCTIONING AND SOCIAL CONTROL

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The recent popularization internet access by the main online services has exposed to public view the existence of alternative forms of organized socialization not involving face-to-face contact. Often described as the best translation of the Brownian movement in social interaction terms, the community self identified as Usenet is one of the oldest and most vital aspects of the Internet. In spite of its apparent anarchy, the Usenet community reveals itself as hierarchically organized in oligarchic technocracies defined by resource access and technical competence. The virtual absence of permanently identifiable social actors redefines the relationship between individual and community, where the acknowledgment of the other becomes re-creation of net-personas through the interpretation of their fragmented literary production.

In this context, the existence of rules implies the problem of their enforcement, as well as what constitutes an appropriate sanction or where and how decreed sanctions are applicable. All this is regulated by net uses and lore.

In this paper, I analyze the existence and the diffusion of rules on Usenet, their raison d'être and the mechanism through which they are enforced. I argue that the relational motivation to online socialization exposes the individuals to attacks to their status in the community as a primary disciplining device. Internet sanctioning is structured by the necessity of public punishment and by the propension for a naive reproduction of popular culture archetypes of law enforcement and justice.

HIGH ENERGY AND HYPERTEXT: OR IF ELECTRONIC PUBLICATION BRINGS DEMOCRACY TO PHYSICS, WHAT ELSE COMES TOO?

Joann Eisberg
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Within the last three years, theoretical high-energy physicists have turned to electronic publication (eprint), via the internet, for essentially all communication of their research results. The impetus for this move was democratic. Communication in physics has been dominated by the preprint, a paper copy of an article mailed to colleagues months, or even years, before the article's publication in a research journal. The preprint culture reinforces existing hierarchies: preprints are exchanged between the prominent, and the advantage they confer is substantial in a fast-moving field. Eprints, by contrast, are author-posted to a centralized archive stored on a computer at Los Alamos National Laboratory; they are free, unrefereed, instantly accessible, and can be downloaded by anyone with internet access.

Currently, almost all high-energy eprints are eventually republished in recognized paper journals. However, paper publication increasingly serves only the function of validation (useful for hiring, promotion, and tenure); scientific communication has already happened in the electronic stage. In high-energy physics, eprints are expected to displace paper journals within a few years. The impending move to the internet raises questions concerning the relationship between mode of communication, community structure, and habits of community thought. Should eprints take advantage of hypertext, referring to supplementary information, offering alternative interpretations, and in other ways escaping the tyranny (but also the discipline) of linear communication? Should reader response replace the review process? If so, should it take the form of commentary, or ranking? Should reader response be hypertext linked to eprints? Should authors control hypertext linkages to their writings? As technical barriers fall to participation from outside this professional community, will members still idealize its openness?

PROFESSIONAL EXCHANGE IN THE AGE OF CHAOS

Wayne Miller
UCLA

Being a prophet of change in this age is not difficult. With the explosive expansion of computer and various other digital technologies, we can expect that information will become ever more exchangeable, ever more available. What is not obvious is how this expansion will structure itself: what are the cybernetic formations that will divert and direct the energies of scholars and researchers into new channels? What are the parameters of information storage and retrieval?

I will lay out some of the realities of professional exchange in literary studies at this time, including existing forms of electronic communication. The Internet, America's prototype information superhighway, is currently being used by humanists primarily for message exchange and the presentation of texts. I will argue that it is when electronic information is made multi-directionally and rapidly exchangeable that we will have substantive change in how scholars exchange ideas and knowledge. This stage, I believe, will differ fundamentally both from "electronic scholarly conferences" based on electronic mail and from hypertextual representations of information. The former tend to serve as supplements to scholarly work, and the latter are experienced interactively, but are usually based on relatively static input.

The harsh realities of information access will make the greatest difference: 1) input proliferation and 2) data overload. With the growth of the Internet, we are seeing the establishment of an international network that has the potential reach of the telephone. While interchange on the telephone is usually fleeting, serial and "monogamous," the Internet allows persistent, multi-lateral and near simultaneous access for everyone. We see a proliferation of potential interconnections that approaches the complexity of neural synapses in the brain. And this proliferation raises the question of the fractal or chaotic nature of exchange on the Internet. Should we be counting the number of nodes, or the number of potential interactions, to get a sense of the immense possibilities?

The consequence of this is not only a unique opportunity for the creation of community, of exchange and of interaction, but also the potential for unmanageable and disorienting data overload. We will not see a random or perfectly distributed expansion of information, but rather the growth of micro-communities that will "grow" manageable supplies of information and exchange. Similar to physical chaotic phenomena, these communities could be characterized by rapid iteration of exchange, many sources of input, and the lack of the finite points of equilibrium so characteristic of hierarchical information exchange. They may achieve a kind of stasis around "strange attractors" - concepts that inhabit both disciplinary and interdisciplinary spaces. I anticipate that hypertext presentation and freely exchanged commentary, emendations and elaborations will lie at the heart of this new form of exchange. I will discuss some models of what this could look like in the near future, based on technological directions already taken in the computer industry and on the Internet. Indicative examples include groupware, "document-centered computing", intelligent agents, annotation servers, MOOs and the like. The ultimate result could be a technologically mediated collectivization of the production of knowledge.

"Early Ornithology and Racial Mobility: Anxieties of Becoming Ethnic in 19th Century Science and Literature"

Stephen Germic
Wayne State University

In the geography of 19th century class divisions in America, social spatializations contributed to the construction of ethnic identities. Whether an individual occupied a particular actual place in the urban landscape or an invented place in "scientific" racial taxonomies, the insistence on the delimitations of such places belied real insecurity about the stability of class position. The frequent depressions (and general economic instabilities) of the 19th century, not to mention the booms, made social mobility a prevalent phenomenon--and consequently racial mobility an unconscious fear among the middle classes. Literary Naturalism participated, often quite explicitly, in the elaboration of racial/ethnic taxonomies, while at the same time it frequently exposed the middle class terror of the prospect of social mobility. A comparison is made between such complex articulations and the obsession among amateur ornithologists and scientists with the "menacing" English Sparrow, which was anthropomorphized into the representative of the often invisible "other" of middle class fears.

Rex, the Microscope, and the Construction of the Female Body: Honeybees in the 17th and 18th Centuries

Yvonne Noble

In the early 17th century the big bee was seen as "Rex", a military leader, a formulation most influentially put forth (much earlier of course) by Virgil in Genjics IV. (Virgil stresses that bees were exempted - as a favor from Jove - from sexuality, and reproduce or are reproduced in other ways.) 17th century rulers use images of bees to reinforce their claims to leadership by divine right. In this connection the first published observations of specimens seen through a microscope were of a honeybee, chosen in the hope of gaining research support from a Barbarini Pope (the Barbarini coat of arms features bees). (Stelluti, 1620, 10x glass by Galileo).. In 1663 Swammerdam, with a vastly superior lens and impressive techniques of dissection and preparation, sees the eggs within the (theretofore) "Rex" and the penises of the drones (earlier thought to be lazy, useless females (Hesiod) or perhaps impotent males ("without stingers," e.g. Wycherley The Country Wife)). Swammerdam's discovery is of course part of the wide and unsettling reconstructions of sex and gender related to those in epistemology and science in the 17th century. "Rex" becomes not only female but a female body consisting almost entirely of giant ovaries, i.e, super-sexualized in the very moment of its feminization. Swammerdam's own words on the recognition of the implications for gender of his discoveries are of great interest. I would like to present and discuss those, as well as the text that introduces the new understanding of bee sexes to England, a manual of apiculture by Joseph Warder, 1713. 1713 is still the reign of Queen Anne, who had endured seventeen pregnancies in order to secure an heir, and who was now near her death, bloated, disease-ridden, and childless. Warder is very conscious of parallels between his monarch and the subject of his writing. If time permits, I would like also to examine gender aspects of resistance to science in this period, for example in the bee/spider images at the end of Swift's Battle of the Books.

STRANGE ECHOES: PARALLEL IMAGINATIONS IN OLD INDIAN LITERATURE AND MODERN PHYSICS

Subhash C. Kak
Department of Electrical Engineering
Louisiana State University

Ancient Indian literature is characterized by a rich imagination. The two epics, Ramayana and Mahabharata, that go back at least 2000 years, speak of airplanes and astronauts, weapons, that can destroy the entire planet, persons who can create matter out of energy, and others who can do time travel. This imagination prefigures many of the developments of science of our times. The question as to how such imagination provided the frame for Indian literature will be addressed. Two specific books will be examined. Tripura Rahasya ("The Secret of the Three Cities"), a 700 year old book from India, and the recent Hyperspace by Michio Kaku will be examined for many specific parallels. Tripura Rahasya, whose authorship is not known, consists of a frame story and several sub-plots which, using a variety of direct and metaphorical devices, describes the paradoxical nature of consciousness. But this book also deals with issues related to the nature of time and space. Kaku's book, on the other hand, is a summary of the most speculative aspects of modern physics. It is written engagingly and it is good popular science; it also contains several anecdotes of personal nature. Questions related to aesthetics of imaginitive literature of the variety of Tripura Rahasya will be asked.

The Microbium: Where Men and Microbes Met
Tale the First: Plot

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"Microbes, especially bacteria, have a long and close association with humankind. Many a tale of tragedy or triumph tie men to microbes. A collection of those tales has been gathered here. One might call it historical science fiction--the tales are very real, but the circumstances have been changed to protect the innocent, or the dead, as it often happened." So states the introduction to a collection of such stories. A reading of the first of these will be done at this SLS conference. The story has taken a famous 20th century airship incident and woven a tale of men and microbes into it.

Acknowledging the Tiger: Savaging Science and Society in Gulliver's Travels, The Stars My Destination and Roderick

Frances D. Louis Retired Professor of English York College/CUNY

In the May 1995 issue of American Laboratory, Dr. Gabor B. Levy warns of "efforts to undermine natural sciences by academics, primarily by social scientists." The title of his piece, unsurprisingly, is "Barbarians at the Gate." He does not anywhere suggest that some of the barbarians might already be behind that gate and using it as a barricade. Three notable master satirists and science fiction writers do.

Swift, Bester and Sladek deploy traveling pseudo innocents like two-edged swords, sometimes slashing others and sometimes cutting themselves: Lemuel Gulliver is a gung-ho Baconian; Gully Foyle, is shocked into using his intelligence only by betrayal and the threat of death; Roderick is a tabula rasa I.A., the perfect recording angel.

Levy envisions jealous social scientists "belittling the quantitative features of experimental science" and trying to prove that "it is subjective too. These 'philosophers' think that they are thinking when they are merely rearranging their prejudices." Sladek shows them in action in Roderick. But Swift's educated 18th century Englishman has all the facts--and nary a clue about what they mean. Misunderstanding in the Travels is a condition of homo sapient life, ensuring that barbarians are inside the academy, not just at the gates.

Bester produces a different kind of Foyle for his own satiric tour, powered by savage indignation and the need for revenge. Gully tours human savagery in the 25th century as Gulliver does in the18th, and Roderick in the 20th--and like his fellow travelers ends up showing that "applied science" is often the immoral and illegitimate application of the legitimate offspring of science--technology. Gully Foyle, "gulled" and "foiled" by his own vicious kind, learns to gull and foil in vicious turn, but comes out ahead by acknowledging and even defeating the tiger--the violent and irrational component of human nature-- whereas Gulliver ends up on all fours in a stable, denying his Yahooness by learning to neigh.

Sladek's Roderick, a hugely advanced A.I. housed in a clumsy little ambulatory metal shape, is the ultimate "innocent" abroad; like our children, he is programmed by TV, he and the boob tube left on together. Roderick records human savagery in mercilessly nonjudgmental detail; he can neither inflict savagery (like Gully Foyle) nor (like Gulliver), presume to condemn it.

Where Dr. Levy warns against barbarians outside the pale of natural science, the satiric inclusiveness of Swift, Bester and Sladek indicts us all. Perhaps this universal acknowledgment of complicity is all great satire can achieve; there is no evidence that this kind of satiric assault has either improved the species or impeded the science. Satirists simply force us to accept the "fact" (not limited to natural science) that we are part of the problem--not just the solution. All barbarians--at the gate or already inside it--are savages fighting for their own piece of territory at the expense of everybody else, all actively Balkanizing (to use the cant word of the hour) our lives.

ANTIGRAVITY: MATTER AND THE IMAGINATION AT THE END OF THE 19TH CENTURY

Elmar Schenkel
University of Leipzig

Since the 1860s fantasies of antigravity and weightlessness begin to proliferate in European literature and the arts. It seems that authors and artists are becoming aware of what dynamic stability, falling and floating, and fundamental bodily postures imply. During these years scientists discover the vestibularium, a new sensory organ that conditions our sense of balance. This paper takes George MacDonald's fairy tale "The Light Princess" (1867) as its starting point and explores the connection between weightlessness and language. In MacDonald's tale a pivotal issue is at stake: the relationship between mind and matter as expressed in the princess's lack of gravity and her father's positivism. The nascent genre of Science Fiction develops antigravity as a central motif in fiction. As new models of time and space are about to be used in physics, gravity becomes one of the central issues in relatively theory. Early speculation on space travel drives home MacDonald's point that human beings are about to leave the physical world. This separation of mind from matter, humans from their earth calls for techniquess of re-entry. For MacDonald it is the imagination which enables us to re-align spirit and matter.

Creating a Canon:
Consolidating the Cultural Studies of Science

N. Katherine Hayles
English Department, UCLA

In *Higher Superstition*, Gross and Levitt suggest that the cultural studies of science ought to purge itself of its "unsound" members, holding out the promise that a thus purified field would be accepted by scientists, which is to say, themselves. Given its obvious intent to bring the cultural studies of science to heel by dividing and conquering, the reaction to this proposal has been surprisingly mild. On electronic discussion lists, such a well-known practitioner of STS as Steve Fuller has almost seemed to embrace the idea. I propose to adopt the opposite strategy. The time is right for a re-assessment of the cultural studies of science that would seek to articulate ideas and propositions now so widely accepted and documented that most people in the field would agree with them. These include the realization that the context in which questions are formulated cannot be meaningfully separated from the context in which answers are sought; that the questions which count as important are strongly dependent on cultural contexts as well as disciplinary traditions; that there is not one "scientific method" but a host of practices and techniques that are discipline-specific; that language interacts with scientific inquiry and articulation in formative and complex ways; and that laboratory practices are guided by intuitive knowledges that are not completely formalized or articulated.

The purpose of articulating a canon is not, of course, to place these propositions beyond challenge. Rather, it is indicate a central core that will enable further work to be done, including work that might force revision of these widely accepted ideas. If Kuhn is correct about how disciplines are formed, the cultural studies of science is at the threshold of becoming a discipline. The implications of this disciplinary formation for literature and science will be discussed, as well as its implications for the production of reliable scientific knowledge.

Saturday, November 4, 8:30-10:00 AM

A. Narratives of Non-Human Others I: Narratives of Great Apes **Summit**
Nicholas Gessler, organizer and chair

- Francine Patterson (guest speaker): "The Evolving Narratives of Koko and Michael: Generative Language Use in an 'Emergent Literature'"
- Joanne E. Tanner: "Responding to Necessity: Invented Narratives of the Great Apes"
- Patricia Greenfield: "Language, Tools and Brain: The Ontogeny and Phylogeny of Hierarchically Organized Sequential Narrative Activity in Apes"

B. Science and Society I: Fictional and Real Dystopias **Canyon(HI)**
Stephen Hartnett, chair

- Luke Carson: "Veblen's Idle Cause"
- Alvin C. Kibel: "The Machine Stops: Forster's Virtual Reality"
- Richard S. Wallach: "Captain Ahab, Judge Holden, and the Iconography of Science in 19th Century American Nation Building"

C. Cyberplaces: Engendering Space for a Place/Time Continuum **Pavilion**
Nancy A. Barta-Smith, organizer and chair

- Nancy A. Barta-Smith & Sarah Stein: "Cyberspace/Cyberplace: Making Sense of Information Technology"
- Jaishree Kak Odin: "Negotiations between the Hypertextual and the Postcolonial"

D. Medicine and Illness II **Bel-Air Patio**
Jennifer Swift Kramer, chair

- Susan Connell: "The Champion Athlete: When Rare Personal Achievement and Modern Science Collide"
- Laura Otis: "Bleeding for Health: Gide and Freud"
- Kate Nickel: "The Company We Keep"

E. Chaos and Complexity II **Westwood(HI)**
Julie Hayes, chair

- Yves Abrioux: "Foucault, Chaos, Complexity"
- F. Paul Cilliers: "Complexity and Postmodern Knowledge"
- Richard D. Davis: "Model Metaphors: Mimicking Chaos Theory in the Humanities"
- Torin Monahan: "The Labyrinth of *Jealousy*: The Chaotics of Robbe-Grillet's Postmodern Novel"

F. Delivering the Male: Biological Determinism and the Institution of Masculinity **Metro**
Hilene Flanzbaum, organizer and chair

- Geoffrey Sharpless: "Making Bodies, Making History"
- Stuart Glennan: "Why Johnny Plays With Guns: Assessing Recent Work on the Biological Determinants of Masculine Behavior"
- Hilene Flanzbaum: "The Incredible Shrinking Man: Sexual Dysfunction in Modern Literature"
- Ross Shideler: "Undermining the Father: Darwinism, Scandinavia, and Ibsen's *The Wild Duck*"
- Blake Allmendinger: "Mother Lode: Technology, Male Midwifery, and Gold-Mining Literature"

SOCIETY FOR LITERATURE AND SCIENCE
NARRATIVES OF NON-HUMAN OTHERS:
Guest Session A: NARRATIVES OF GREAT APES:

The Evolving Narratives of Koko and Michael: Generative Language Use in an "Emergent Literature."

Francine Patterson, The Gorilla Foundation, Box 620-530, Woodside, CA 94062. Phone: (606) 654-8726. (Francine is the co-author of "The Case for the Personhood of Gorillas," in *The Great Ape Project: Equality Beyond Humanity*, edited by Paola Cavalieri and Peter Singer, Fourth Estate, London, 1993.)

Abstract: Lowland gorillas Koko and Michael have been instructed in American Sign Language by their human caregivers. They regularly use not only the signs they have been taught, but also their own modulated or compounded variations of those signs, natural gorilla gestures, and invented signs (both iconic & noniconic) in their conversations and narratives. Over the past two decades the gorillas have demonstrated the ability to represent past events, describe their emotional states, and express capacities for humor, empathy, and self-awareness. A chronology of illustrative conversations from the daily data recorded for Koko and Michael will be presented.

An example of the type of dialogues to be included is one which took place between Michael and a human companion on September 30, 1979 when Michael was six years old. He initiated a conversation about a past event of which his human companion knew nothing. The gorilla described a violent argument involving a red-haired woman that took place outside his window on the Stanford campus. In the narrative, Michael made use of nine different gestures: Five were signs he had been taught (girl, know, red, hair, big-trouble), one was an iconic gesture of his own invention (hit-in-mouth) which had become part of his vocabulary, and two were signs invented by Koko (bite, lip) which he had acquired from her.

Koko's sign conversations have incorporated several spontaneously generated signs which were also independently generated by her brother, Kubie, an adult male gorilla at the San Francisco Zoo. (Although they are full siblings, Koko and Kubie never had any contact, as Koko had left the zoo well before Kubie was born.) Of particular interest is that these gestures, virtually identical in form and used with the same apparent meanings, emerged in different individuals at different times and in different physical and social environments.

RESPONDING TO NECESSITY: INVENTED NARRATIVES OF THE GREAT APES

Joanne E. Tanner
Scottish Primate Research Group
University of St. Andrews, Scotland

Certain kinds of social and environmental conditions seem to promote the development of novel forms of communication in great apes. Both in zoos and in the field, some individuals are found to adopt types of visual communication and other behaviors which are not species typical, and utilize repertoire that may or may not be shared by other group members. In one group of zoo gorillas which was studied, innovations could be related to the presence of competing males and a physical environment which permitted female choice as to proximity with males, as well as to the interaction of the personalities of specific individuals. One gorilla was found to describe his intentions for the activities of others, and another to alter after the fact impulsive messages she involuntarily emitted. The context of such expressive actions is dialogue, not monologue, and is driven by the individual's constant adaptation to the conditions of ongoing interaction. The developmental processes involved in creating such communicative innovation are of interest in speculating on the origins of language abilities in the course of human evolution.

SOCIETY FOR LITERATURE AND SCIENCE
NARRATIVES OF NON-HUMAN OTHERS:
Guest Session A: NARRATIVES OF GREAT APES:

Language, Tools, And Brain: The Ontogeny And Phylogeny Of Hierarchically Organized Sequential Narrative Behavior In Apes.

Patricia Greenfield, Department of Psychology, UCLA, 405 Hilgard Avenue, Los Angeles, CA 90024 . Office: 310-825-7526. E-mail: ibenaae@mvs.oac.ucla.edu. (Patricia is the author of "Language, Tools and Brain: The Ontogeny and Phylogeny of Hierarchically Organized Sequential Behavior," in Behavioral and Brain Sciences, 1991: 14, 531-595.)

Abstract: During the first two years of human life a common neural substrate underlies the hierarchical organization of elements in the development of speech as well as the capacity to combine objects manually, including tool use. Subsequent cortical differentiation, beginning at age two, creates distinct, relatively modularized capacities for linguistic grammar and more complex combination of objects. An evolutionary homologue of the neural substrate for language production and manual action is hypothesized to have provided a foundation for the evolution of language before the divergence of the hominids and the great apes. Support comes from the discovery of a Broca's area homologue and related neural circuits in contemporary primates. In addition, chimpanzees have an identical constraint on hierarchical complexity in both tool use and symbol combination. Their performance matches that of the two-year-old child who has not yet developed the neural circuits for complex grammar and complex manual combination of objects.

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Veblen's Idle Cause (Abstract)

Veblen is best known as the critic of conspicuous consumption and the leisure class; his guiding normative concept is the "instinct of workmanship," and his implicit social vision calls for the reorganization of the economy and of the political order according to the value of industrial efficiency. However, as Adorno pointed out, Veblen's "attack" on the barbarity of "culture" in the name of technological rationality is also implicitly a dialectical attack on the barbarity of that rationality. Veblen's critique of pragmatic efficiency finally requires that he posit an alternative to barbarian-pragmatic instrumental reason, which he first does systematically in his analysis of the "the evolution of the scientific point of view," the precondition of which is a prehistorical cognitive mode of apprehension or perception he calls "idle attention" or "idle curiosity. Veblen's rather traditional argument in defence of a certain form of idleness does not appeal to the "culture" of the leisure or idle classes, but to this archaic process of "idle and irrelevant" motor responses which historically bifurcates into barbarian-pragmatic instrumental reason and aesthetic disinterest.

One would hardly expect "idleness" of any sort to define a normative concept in Veblen's thought, given his critique of the display of "idleness" as leisure. Nonetheless, it appears under a third guise as well. Veblen develops alongside the notion of "idle attention" another normative concept, this one more strictly scientific. Veblen examines contemporary science's inability to abandon the notion of causation in favor of a nonanthropomorphic, statistical notion of "an idle concomitance of variation"--in effect, a kind of causation that (like the "idle" classes) does no work, but occupies the empty place of the cause. Veblen regrets that anthropomorphism must always return to the scene of the cause, that thought cannot become an abstract "notation" of the "idle concomitance of variation." His regret indicates the foreclosed utopian desire that his thought strategically refuses to accomodate. This symptomatic motif of "idleness" was already evident in Veblen's earlier work on the instinct of workmanship. Despite his valorization of the instinct of workmanship Veblen allows himself to imagine the life of savages as characterized by indolence or idleness, in a time of abundance before the regime of need, utility and scarcity that made the barbaric struggle for life necessary. It is not by chance that "idle concomitance of variation" aptly describes the leisure class, which is composed of those who lag behind technological "variation" because they have no pressing need to adapt.

But what can bring "idle curiosity," "idle concomitance of variation," the leisure class, and savage idleness together under one semantic horizon? Common to these contradictory versions of "idleness" is the absence of subjectivity; subjectivity emerges in conditions of need and scarcity, and is therefore always "barbarian-pragmatic" (competitive, rivalrous, ostentatious and wasteful). Veblen's implicit ideal of the "fullness of life" can only come into being if these conditions are abolished. The only possibility of presenting the phantasm of "idleness" lies in the avowedly impossible discipline to think causation beyond subjectivity; but this phantasmatic "idle concomitance of variation" is the vestige of the archaic yet always concomitant "idleness," an economic waste product incapable of adapting to what is demanded by the present; for this reason, it is the very promise of something more embedded within the present. Veblen, however, despite his demonstrable investment in such a phantasm, gives up on the possibility of presenting or symbolizing this missing surplus in any form. Therefore, it returns from this repudiation: at his most technocratic, Veblen deploys his concept of causation, borrowed from science, in his social theory. The cause appears as the ego-ideal voicing the imperative to adapt to its necessity by sacrificing the very vestiges of the archaic that preserve the phantasm, and by submitting to the demands of the "machinic process," historically phenomenalized in industrial technology. The sacrifice promises the very thing it gives up.

THE MACHINE STOPS: Forster's Virtual Reality

Alvin C. Kibel
Literature Faculty
Massachusetts Institute of Technology

E.M. Forster's dystopian novella, "The Machine Stops", has not received all the attention that it deserves. Most commentators (and they are remarkably few) rightly see it as a fin-de-siècle document, coming shortly after H.G. Wells's underground fantasy "The Time Machine" and similarly concerned with the theme of degeneracy--degeneracy consequent upon the mastery of nature and the technical conquest of the human environment. Without the perpetual challenge of nature's otherness, its continuing obduracy to our projects, humanity's capacities for self-understanding and self-direction atrophy--so runs the argument assigned to Forster's story. The filiation of this argument may be traced from Ruskin's "Nature of Gothic" (where the mental capacities of the intellectual class are said to be threatened by the loss of labor, even as the laboring capacities of the working class are threatened by the mindlessness of its tasks) through Huxley's "Prolegomena" and Wells's story, and taking particular inspiration in reaction to Wilde's "The Soul of Man under Socialism", with its vision of a world made possible by industrialism in which the curse on labor would at last be lifted, machines would do all the work and mankind would be freed for the endless challenge of labor-free intellectual self-development.

Placing the text in this way catches one aspect of its meaning. Another approach tackles the power of its central, organization metaphor to represent or model social relationships in the modern world. Here commentary has gone somewhat astray, concentrating upon the usual dystopian elements--the Central Committee, the flattening or evisceration of private life, the conformities of thinking and expression insisted upon by a system anxious to preserve the internal stability of a technological or materialistic paradise. What this approach misses is the way in which Forster's presentation of the future overtly catches a central feature of modern civic life--the extent to which social relations between people has been subjected to what Anthony Giddens calls a process of "disembedding", whereby they are lifted out of local contexts of interaction and restructured in forms admitting of digital and hence mechanical representation. Forster's prevision of a world in which people communicate only and entirely by means of video screens, astonishing enough for 1908, was not meant as a dystopian prophecy but as an image of what social relations had become in his own time. (And is this not the essence of much science-fiction--not to depict a threatening future but by introducing a particular change in some general feature of the circumstances of human life to motivate a systematic depiction of that life and so exhibit something about the way we live now?) A comparison of Forster's text with a recent essay on Virtual Reality in the corporate workspace (Pruitt and Barrett's "Corporate Virtual Workspace" in Michael Benedikt's anthology, Cyberspace: First Steps) helps to flesh out this contention.

Captain Ahab, Judge Holden, and the Iconography of Science in 19th Century American Nation Building

Rick Wallach, University of Miami

Herman Melville's whaler, the Pequod, represented an apogee of mid-19th century technology. Its captain, Ahab, was a prototechnocrat committed to the technology's extreme application, regardless of any moral constraints. I compare the fictional Ahab as new technological man, with a historical figure from General Samuel Chamberlain's Mexican War memoir, *My Confession: The Recollections of a Rogue*, the mephistophelian gunfighter/genius Judge Holden (recently made famous by Cormac McCarthy in his 1985 novel, *Blood Meridian*). Chamberlain's diary plays out the same myth of technocratic brutality Melville staged on the sea, but in the desert, that other great American metaphor for the ideal emptiness.

More than mere analogy links Melville's and Chamberlain's texts. The Pequod is named for the first American Indian tribe slaughtered to extinction, and as Michael Rogin points out, their extermination "pointed forward -- by way of Andrew Jackson, New Orleans, and Indian Removal -- to the war against Mexico." Chamberlain abandoned his army unit at the close of that war to join a nightmarish gang of contract scalphunters, and related how Judge Holden established his *de facto* leadership of the gang by debunking Biblical timeframes and discoursing on paleontology.

I argue that disasters as enormous as native American genocide paralyze the moral imagination and jut from history like geological anomalies; they cannot be written, per se, but cultures attempt to reinscribe over them as a response to their sense of moral paralysis. Judge Holden's discourse demonstrates how early the myth of technological progress successfully competed for legitimacy with the Christian myth by claiming access to an originary time pushed back beyond the horizons of verifiability by `science' in the form of Cuvier and Lyell's revolutionary texts. But the technomyth also appropriated the Biblical injunction to subdue the earth. Thus, their humanity dwarfed by those temporal expanses, the bodies of native Americans in Chamberlain's narrative are reduced to commodities like Melville's whales.

The America both authors inhabited led Melville to describe and, inevitably, to interpret Ahab according to the same nascent yet complex iconography of science Chamberlain descried in his equally mad gunfighter. For both authors, technological monomania links the practices of whaling and aboriginal genocide in a metaphor for 19th-century American nation-building.

ABSTRACT

Nancy A. Barta-Smith
Drake University

Sarah Stein
University of Iowa

CYBERSPACE/CYBERPLACE: MAKING SENSE OF INFORMATION TECHNOLOGY

This presentation continues the dialogue on embodiment and information technology framed by Kate Hayles' panel in New Orleans 1994. It undertakes a systematic comparison between the video game *Voyeur* and Brenda Laurel and Rachel Strickland's *Placeholder* using Merleau-Ponty's revision of Piaget's psychology to shape analysis.

For Merleau-Ponty, the child's global thinking, the experience of place and immersion in surroundings, is not left behind in development to abstract operations but remains its context, just as for Piaget concrete motor operations teach and prepare for formal and mathematical operations, though in the case of Piaget earlier forms are surpassed. For Merleau-Ponty the body is always already in the mind as the context for linguistic constructs however much it may also reside there as the product of linguistic construction. In this sense, the problem is not why the virtual world is conceived as disembodied cyberspace but how place and things become disembodied information. For Merleau-Ponty this has to do with their use for thought's sake, with substituting intentions for attentiveness, direction or point of view for immersion with/in site, scientific pursuits for lived experience, academia for the everyday, the wide world for narrow focus. Analysis of the video game *Voyeur* and the *Placeholder* project will entail seeing how well they are representative of what Merleau-Ponty calls the affective background for acts and of Piaget's motor and formal operations that erase things and world as context, making them means, gap, or space between the subject's origin and accomplishment in the act of manipulations and use.

For Merleau-Ponty neither contemplation nor observation are adequate terms to return us to the embodied experience of sight/site, for they assume the world is in front of us as if we are only in the process of arriving at a destination from the outside. They assume direction and intention as primary ground as de Beauvoir does when she associates human *transcendence* with the desirability of an instrumental attitude towards things and world in *The Second Sex*. Contemplation and observation are euphemisms for use since they imply an empirical attititude that wrenches the object from its background and severs its connection to place and potential to solicit our attention and response--what Merleau-Ponty calls "circular causality" in *The Structure of Behavior* (7). For Merleau-Ponty acts must be solicited by others (broadly conceived as people and world) rather than planned by subject and self if both people and things are to retain their place. In fact, just as treating people as means makes them things, he affirms that giving place to things makes them people. *Placeholder* seems to affirm this conviction in its animating of environment.

For Merleau-Ponty, both causal means/end manipulation and hand/eye coordination are embodied experiences but the former replaces vision's figure/ground structure with means/ends subordination or grasp and use. With focus on ends potentially present in the future and thus necessarily existing only as images in imagination's mental and virtual space, the world disappears. The background of place becomes the blackground of void, accounting for why we think we escape the world when lost in thought. In contrast, hand and eye co/operate in the touch and be/holding of perception's attentiveness and dynamic form, for which there are special receptors in the visual cortex, affirming the physiognamy or facial (human) features of both things and people. It is thus the presence of certain kinds of embodied experiences rather than the absence of embodiment that accounts for the erasure of the body in information technology and the creating of cyberspaces rather than cyberplaces. One aspect of our presentation, then, will consider the incorporation of sex and death as narrative content into interactive entertainment forms such as *Voyeur*. The seemingly secondary status given to those elements--relative to the competition/game/instrumental mastery elements that are foregrounded--may mask their necessity as anchoring devices to the body erased in cyberspace. We hope to affirm that it is cyberplaces that will provide a virtual reality teaching us our relation to things and the wisdom of. living with, as well as in, a world there is no escaping.

Negotiations between the Hypertextual and the Postcolonial

Jaishree Kak Odin
University of Hawaii at Manoa

Both postcolonial and hypertextual discourses are characterized by multivocality, multilinearity, open-endedness, active encounter and traversal for which the metaphors of 'nomadology', 'borderland' and, 'contact zone' are frequently used. My essay focuses on the one hand on representational modes--fragmentation/ discontinuity, multiplicity/ multilinearity, active encounter/active traversal,--in the hypertextual environment, both computer and cinematically generated, and on the other hand, on the web they weave with the subject of representation intricately connected to the cultural matrix into which flow both the local and the global, the human and the cosmological, and the social and the political. The hypertextual and the postcolonial are part of the changing topology of information culture which is redefining not only our conception of language, subjectivity and representation, but also that of embodiment. Advanced technology has shrunk time and made experience of space multidimensional, so that writers have felt compelled to reconfigure and rearticulate the new orientation that bodies assume in postmodern space and time. Judy Malloy's *its name was Penelope* a hypertext fiction, in the computer medium, and Trinh Minh-Ha's films *Reassemblage* and *Naked Spaces: Living is Round*, in the cinematic medium, use surprisingly similar strategies to open up new ways of seeing beyond the glass surfaces of normal vision by focusing on cracks, in-between spaces, the gaps, that do not fracture reality into this or that, but this and that. Just as the print text embodied the "self-contained"' and unitary subjectivity of the post Enlightenment discourse, the hypertextual is the literal embodiment of the polyphonic subjectivity of postmodern/ postcolonial discourse. The representational space of the hypertext and the socio-political space of culture are interwoven in my exploration of Judy Malloy's and Trinh Minh-Ha's works.

THE CHAMPION ATHLETE: WHEN RARE PERSONAL ACHIEVEMENT AND MODERN SCIENCE COLLIDE

Susan Connell
San Francisco State University

Athletic champions fascinate, inspire, and entertain. They appear in ancient and modern mythologies, in philosophical treatises, in theories of psychodynamics, in poetry and fiction, in graphic art and film. To be such a champion is rare in human experience, and the distinction itself implies discipline, competition, achievement witnessed by others, and usually youth or young adulthood.

In the eras preceding advances in biotechnology, in human genetics and in pharmacology, it was assumed that great athletes achieved such status by difficult and focused work. This work could have symbolic cultural value, as in the ancient Greek concept of ARETE (loosely translated to mean "excellence"). Initially an ideal for aristocratic youth, ARETE incorporated, along with rigorous physical education and sport, training in what we now call the arts and humanities. Or this work could have concrete, personal value to the athlete, bringing fame and prizes. Societies have evolved and developed a range of symbolic and concrete definitions of their athletic champions, and until recently such champions were assumed to have earned that designation by long periods of difficult physical work and mental discipline.

We know now how certain drugs can affect athletic performance. But what of some of the predicted uses of gene therapy for enhancement of a healthy human being, such as to increase height? In the future, shall we manufacture world-class athletes with genetic engineering, assuming some accepted quantification of identifiable characteristics? If they're manufactured to specification and no longer must toil to earn a rare distinction, what importance to societies will they have? And what of individual motivation, and the concept of talent?

This paper will discuss the idea of athletic champion as it is presented in several literary works, and comment on the evolution of the idea made possible by modern science, particularly molecular biology. The author will include information from her interviews with champion athletes.

BLEEDING FOR HEALTH: GIDE AND FREUD

LAURA OTIS
HOFSTRA UNIVERSITY

In the first decade of the twentieth century, André Gide and Sigmund Freud independently decided to distinguish sickness and health through a common metaphor. Each writer associated health with free circulation, so that illness was constructed through images of blockage or stagnancy. Freud, in his *Three Essays on the Theory of Sexuality* (1905) used the metaphor to interrelate the sexual development of perverts, neurotics, and normal individuals: "In [psychoneurotics] the libido behaves like a stream whose main bed has become blocked. It proceeds to fill up collateral channels which may hitherto have been empty." The flow of a healthy libido, for Freud, might well be guided but should never be halted. Gide, in *The Immoralist* (1902), explored the relationship among circulation, illness, and health not only metaphorically but through his narrative structure, depicting the circuitous movement of people, money, phrases, stolen goods, and disease. Illness in *The Immoralist*, as in the *Three Essays*, means stagnancy, an interruption of normal flow, a deadly collapse of circulation.

In the frame tale of *The Immoralist*, the narrator Michel has dropped out of circulation, physically healthy but with a crippled will. The circulation of his story among his friends, the free association of the narration, becomes an effort to restore health. The story he tells, furthermore, is the story of a circuit: the repetitive journeys of himself and his wife between Normandy and North Africa. Stricken with tuberculosis on his honeymoon, the aescetic historian Michel is inspired to live by an enigmatic image of health: Bachir, a young North African boy, cuts his thumb and laughs delightedly at the free-flowing blood. Michel compares this blood with the "thick, hideous clots" he is coughing up and finds himself filled with a raging will to health--health being associated, from the beginning, with openness, with a thoughtless and liberal expenditure. His recognition of his attraction to the African boys after years of repression indicates his entry into the social circulation of desire.

The regimen of reckless movement and expenditure that brings Michel back to health, however, kills Marceline when she develops the disease that has circulated from her husband to her. When she dies, Michel finds that, cut loose from his wife, his property, his tuberculosis, and his "history," free to circulate sexually and intellectually, he has also cut himself free from all desire for movement. He is still repressing something, and in a statement that resonates with Freudian theory, he declares: "Sometimes I'm afraid that what I have suppressed will take its revenge" (170). It appears that the removal of obstacles to flow is necessary but not sufficient for the restoration of health, the circuit requiring a potential difference, a driving force, and perhaps also some resistance, for there to be significant movement.

Neither Freud nor Gide, then, suggests that health is synonymous with unrestricted flow, although their common metaphor does construct illness as a blockage. Since Gide was unfamiliar with psychoanalytic theory until 1916-17, it is likely that both drew upon cultural traditions as well as upon their own rich imaginations, for this metaphor. Their use of it, especially Gide's image of the bleeding thumb, ties them to their medical ancestors who bled patients to restore circulation and health.

The Company We Keep

Kate Nickel RN, MSEd, Doctoral Candidate
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Rapid technological advances in health care delivery have produced some dramatic alterations in the nature and scope of health care, needs of the health care consumer, and the "praxis" of nursing. Because the nature of nursing places us in the position of dealing with some of life's knottier problems and because the nature of the nurse-patient relationship is so intimate, "wideawakeness" about ourselves is as essential as acquiring scientific knowledge and technical skills.

This paper explores the force of literature in the ongoing dialectic between science and art in answering the question, How should I nurse? Framed on Aristotle's ethical view, which includes noncommensurability of valuable things, priority of the particular, and the ethical value of the emotions, selected passages from commonly used nursing textbooks and selected pieces of literature will be compared.

A view of the world of the imagination as an envisioning of possibilities that expands the horizon of empiric knowledge has exceptional value for nursing practice. While empirical information provides a framework for safe practice, constructs of the imagination provide us with knowledge possibilities that are impossible to encounter in other ways. Approaching patients armed only with the constructs of the textbook knowledge and the ability to act reduces nursing to the level of practicality. Imaginative encounters with patients allow room for tolerance of differences and individualization. Thus it is within an imaginative framework that we hear a patient's story and develop the capacity to distinguish what is and what might, should, or ought to be within the context of a particular patient situation. Approaching assessment with the expectation that a patient's history will reveal the important missing pieces of information you can snatch out and run off with, leads to premature closure of the epistemological puzzle. Case histories are limiting and evaluative judgments should not be hurried. Besides histories are often presented in discursive language, the vernacular of textbooks. The language of a patient's story is evocative and the art of listening to stories is basic training for the imagination. It cultivates our power to communicate, to understand, and to choose.

Reading literature helps us develop understanding because literary discourse transforms and intensifies ordinary language. It represents human existence as a dialogue with the world and challenges our habits of perception and interpretation. The imaginative language of literature lures you into the experience. Reading literature involves the reader in an intimate way, a way that is parallel to the nurse-patient relationship.

The ultimate aim of this presentation is to stimulate vigorous conversation about the value of literature as a means of contributing to personal growth and attitude formation, important aspects of nurse-patient relationships.

FOUCAULT, CHAOS, COMPLEXITY

Yves ABRIOUX
C.R.L.C., Université de Paris VIII

In stating that his historical works were not concerned with studying a "period" but rather with treating a "problem", Michel Foucault implicitly affiliated himself with a scientific mode ef enquiry. How, then, do his studies relate to contemporary scientific models? The hypothesis underlying my presentation is that the dynamical models of history which Foucault evolved over the course of his various enquiries (into madness, medecine, the human sciences, prisons, sexuality ...) can usefully be crossed with concepts borrowed from complex dynamics and chaos theory.

My presentation will begin with a few remarks concerning the historical status of the notion of order (reason, norms, etc.) as defined in Foucault's writings, and by a consideration of some of the ways in which he envisioned the relations between order and disorder.

The main thrust of the argument, however, will centre on Foucault's definitions of statements (*énoncés*) and their relation to discursive formations. I shall reformulate Foucault's theoretical formulations concerning these - chiefly in *The Archeology of Knowledge* - in terms taken from the theory of non-linear dynamics, in order to demonstrate how the materiality of discourse, as this emerges from Foucault's work, exceeds the conventional opposition between chaos and order.

My aim is not to suggest that there is some sort of cultural matrix common to M. Foucault's philosophical positions and contemporary scientific developments, but rather to see how far each can draw upon the strengths of the other. Thus, while the theory of complex dynamics can, in my view, undoubtedly help to clarify Foucault's descriptions of the dynamics of history, it is equally true that his own reflections on power and knowledge are relevant to contemporary science. My presentation will therefore conclude with a few remarks on this question, by way of a consideration of the manner in which Foucault's redefinition of the role of the intellectual relates to the position of the actor/observer in a complex system.

COMPLEXITY AND POSTMODERN KNOWLEDGE

Paul Cilliers
University of Stellenbosch, South Africa

Postmodern theory is often criticised by saying that since it denies the existence of any form of metanarrative, it has to allow that "anything goes". Postmodern theory can, however, be given a different interpretation. Instead of saying that it allows everything in a random or chaotic fashion, it can be argued that postmodernism has an inherent sensitivity to the complexity of the phenomena it talks about. Some important characteristics of complex systems (from the perspective of complexity theory) are discussed, and these are then utilised in a reading of Lyotard's Postmodern Condition. The paper is structured as follows:

Complexity theory is introduced from a philosophical perspective. Ten characteristics of complex systems are provided, focusing on the low-level components in the system and the nature of the interactions between them (e.g. that the interaction is non-linear, operating under conditions far from equilibrium and that the history of the system is important). Examples are provided to indicate how these characteristics manifest themselves in specific systems. The claim is made that these systems can be modelled mathematically, using techniques that conserve the complexity of the system being modelled. An example of such techniques is connectionist networks.

Lyotard's description of narrative knowledge under post-modern conditions is then analysed. It is argued that this description is compatible with the general characterisation of complex systems (e.g. the importance of local interactions, the role played by asymmetry, the process of self-organisation, etc.). The characteristics of complex systems are used to describe the dynamics of the postmodern society. It then becomes clear that the rich patterns of interaction in this society cannot be contained under single descriptions, but that this does not imply that anything goes. Meaning is generated by participating in the patterns of interaction. This is not a random process, but one where we continuously have to make decisions about the value and importance of our actions. These decisions are, however, not made by an autonomous, self-sufficient subject, but by a subject that is constituted by the way in which it participates in the "agonistics of the network". This why Lyotard can say that his description of the postmodern condition is also a theory of justice.

These considerations have clear implications for the way in which we evaluate literature. There are no absolute criteria we can use to discriminate between "good" and "bad" literature, but this does not imply that there is nothing we can say about, or that everything we say is of equal importance. When we evaluate something, we have to immerse ourselves in the complex set of relationships by which that which we wish to evaluate is constituted, including, but not limited to the conditions under which it was produced, as well as the conditions under which it is experienced. In this process, the knowledge of the critic is vitally important, but this knowledge does not determine evaluation in a final way.

MODEL METAPHORS: MIMICKING CHAOS THEORY IN THE HUMANITIES

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Chaos theory has been appropriated by a number of disciplines in the humanities to various ends. In literary and cultural studies, for instance, it has been read into texts, compared with continental philosophy, and used to account for the history and organization of social groups and cultural practices. While intriguing, much of this work is also wrought with unexamined epistemological and political complications.

These complications arise from an overzealous application of chaos theory metaphors. Although an intrinsically metaphorical venture, the application of chaos theory in the humanities often encourages a subtle (or not-so-subtle) determinism in its practitioners. Following Max Black's work on the rhetorical distinction between models and metaphors, I find that chaos theory in much recent work has become a source of not only suggestive metaphors, but proscriptive "archetypes" and "exemplars." Given a sufficient degree of conceptual investment, chaos theory metaphors easily become models that channel the various types of chaos theory-inspired criticism toward a limited range of interpretations and conclusions whose epistemological status remains, unwittingly and troublesomely, splayed across the two-cultures divide.

Chaos theory does double duty in the humanities, serving as a source of hermeneutical insight but also as a new scientistic "physics of the text." The fact that much recent work with chaos theory is drawn, almost reflexively, into some alignment with the latter application is problematic for three reasons: the scientifically faithful applications of chaos theory reproduce the naturalistic fallacy, can arbitrarily curtail the range of our interpretations of action and order (as much as they could be read, metaphorically, as expanding them), and serve to reinforce the hegemony of scientific knowledge in the academy. In sum, working with chaos theory involves one in a game with many hidden stakes, stakes whose recognition hinges on our realizing when a metaphor has become a model.

The Labyrinth of Jealousy: The Chaotics of Robbe-Grillet's Postmodern Novel

Torin Monahan
California State University, Northridge

Chaos theory, having emerged from within a Postmodern milieu, shares with Postmodernism many similar attributes. Both draw attention to and find meaning in the marginal; celebrate nonlinearity; and relish repetition and iteration. One might say that this theory emerged, not for the purpose of, but as a result of its ability to critique Postmodern culture; and as a science of the global nature of systems, it lends itself ideally to the analysis of the eclectic and recursive complexities of Postmodern art. Alain Robbe-Grillet's nonlinear novel Jealousy epitomizes the Postmodern, and as such, one may best analyze it from the perspective of chaos.

In this presentation, I shall first offer a brief description of Robbe- Grillet's Jealousy, drawing particular attention to its Postmodern elements. Next, I'll demonstrate how the science of chaos can function as an ideal means of interpreting Postmodern works of art (using Jealousy as a model). Finally, I'll attempt to position chaos theory within the realm of literary critical theory, while observing its relations to previous, and possible future modes of criticism.

MAKING BODIES, MAKING HISTORY

Geoffrey Sharpless
University of Pennsylvania

This paper employs Thomas Hughes's Tom Brown's Schooldays as an exemplary text to study how Arnoldian pedagogy engages and activates the Victorian concern with the male body as a locus for political power. The nineteenth-century British schoolboy doctrine that athletic contests like rugby and football formed the character of the man derives significantly from Tom Brown. His popularity was crucial to teaching the world that the public school virtues of strong character, self-dependence, readiness and pluck were best learned on the playing field. Moral health, Arnoldian Victorians like Hughes believed, required physcial achievement and bodily courage.

The famous aphorism that "the Battle of Waterloo was won on the playing fields of Eton" reveals the relation of this philosophy of athleticism to the practical exigencies of empire. The promotion of physical courage was taken as a necessity for a nation needing soldiers, and breaking a leg or a rib in the playing-field at Rugby prepared one for the rigors of the battlefield somewhere else. Yet when the health of the Empire thus was seen to depend on the physicality of schoolboys, athletics acquired an importance--even a holiness--that carried indisputable moral weight.

WHY JOHNNY PLAYS WITH GUNS: ASSESSING RECENT WORK ON THE BIOLOGICAL DETERMINANTS OF MASCULINE BEHAVIOR

Stuart Glennan
Butler University

If one reads the recent popular science literature, it is easy to get the impression that the question of whether biological gender influences cognition and behavior has been definitively settled. Boys and girls think and act differently because their brains are different. In this paper I shall suggest that the situation is by no means as clear as is now commonly supposed. There are, in fact, a variety of deep problems with the methods of causal inference used to support the biological determinist hypothesis. Although the question of the causes of sexually differentiated behavior is particularly charged politically, the methodological problems besetting research in this area are not peculiar to it. In fact, the worries I will raise can be raised about most instances of causal inference in the social and behavioral sciences.

I shall discuss two kinds of techniques which researchers have used to infer biological causes of sexually differentiated behavior. First, I shall discuss some "natural experiments" in which congenital endocrinological disorders have allowed researchers to study correlations between hormone levels and sexually differentiated behavior. I will show how the inference from correlation to causation requires the use of further untested causal assumptions. Second, I shall look at how statistical techniques such as analysis of variance and linear regression are used to make inferences about the causes of sexually differentiated behaviors. I shall argue that, in order to make these inferences, we must accept certain assumptions which we have very good reasons to believe are false — most notably assumptions about the homogeneity of the causal structure of individuals and the linear additivity of causal factors.

We want to know why Johnny plays with guns? Is it nature or nurture? We suppose that some percentage of the effect is due to nature and the rest to nurture, and engage in research to determine what this percentage is. To suppose this is to suppose that nature and nurture operate separately and additively. But everything we know about development suggests that all but the simplest of traits evolve from complex and temporally extended interactions between an individual's biological constitution and its environment. If sexually differentiated behaviors arise from such interactions, then it simply a mistake to ask how much of these differences can be attributed to biology.

The Incredible Shrinking Man: Sexual Dysfunction in Modern Literature

Hilene Flanzbaum
Butler University

In Modern literature, male protagonists that connot, or will not, engage in sexual relations are commonplace. This sexual dysfunction can result from a physical wound, as is the case with Hemingway's Jake Barnes and Lawrence's Sir Clifford, or a psychic wound as is the case with the speaker in T. S. Eliot's "The Waste Land." Sexual failure in Modern literature has long been understood to signify humanity's disconnection and disillusionment in the wake of World War I.

This paper advances a more specific argument. It maintains that sexual dysfucntion in literature's Modern male results from his rising class and race anxiety. The loss of control experienced during the male orgasm means the loss of his seed: it means future progeny. Progeny means the dilution of pure bloodlines and genealogies, the mingling of social and economic classes and the infiltration of the family by outsiders: immigrants and others. Thus the most heroic Modern male protagonists understand the urgency of remaining chaste: it is a necessary adaptation if one wishes to uphold a social, racial and economic order that is being battered by the impure strains of the modern populace.

Undermining the Father: Darwinism, Scandinavia, and Ibsen's The Wild Duck

Ross Shideler, UCLA

Charles Darwin did not really succeed in displacing the traditional Christian notion of God, but he proposed a theory in which the Divine Father was no longer fundamental to humankind's understanding of the development of life. In brief, about seventy years after the French revolution and during a time in which England was undergoing a fundamental social and political revision (Desmond & Moore), Darwin challenged, as he knew his theory must, Creationism (Gillespie)---the foundation of the religious and patriarchal structures which had dominated English and European societies for centuries. Darwinism was initially used to reinforce notions of male superiority (Russett, Showalter), and in its social-Darwinian form (more Spencer than Darwin) evolutionary theory and "survival of the fittest" notions played a role in justifying European colonialism. Nevertheless, by questioning the role of the father in the origin of the humanity, Darwin opened the door to people, especially women, who wanted to question patriarchal structures in general.

Though highly controversial, Darwin's theory spread throughout the world. In Scandinavia, a young scientist named Jens Peder Jacobsen (1847-1885) translated On the Origin of Species and The Descent of Man and a renowned radical, Georg Brandes (1842-1927), used Darwinian-related ideas filtered through the French critic Hippolyte Taine (1828-1893) to foment a literary revolution in Scandinavia. J.P. Jacobsen gave up his role as Darwin's translator to become one of Denmark's most famous novelists (in Niels Lyhne [1880], Jacobsen wrote a major novel about the difficulty of living one's life as an atheist). But two of the most famous authors to respond to Brandes's call for a socially conscious literary movement were Henrik Ibsen (1828-1902) and August Strindberg (1849-1912).

Both Ibsen and Strindberg used the nuclear or bourgeois family, which had been developing as a result of the industrial revolution, as the primary location of their dramas. Many of these dramas focus on a challenge to the role of the father. Strindberg, for instance, wrote a play called The Father (1887) in which he explicitly uses Darwinian terminology to enact a struggle for dominance between a man and woman. Ibsen was older than Strindberg, however, and his use of a Darwinian environment is less obvious and perhaps more complex. The Wild Duck (1884) serves as one example of a Darwinian (or Darwinistic as Morse Peckham might call it) background for a plot that turns on a questioning of the father. In The Wild Duck, the illusion of some innate or ideal patriarchal authority (in Lacanian terms "the name-of-the-father") undoes the men who keep trying to live up to an originary notion of a patriarchal ideal. The women live in a world devoid of such illusions, and they make their families, however inadequate they may be and however flawed the supposedly dominant males are, function in simple pragmatic terms.

In other words, Ibsen's challenge to patriarchal authority in the family may be seen as a trope for Darwin's undermining of the divine father. One may look at many of Ibsen's family dramas from one might call a Darwinian or "biocentric" (Margot Norris) perspective. In these plays weak fathers and husbands are often challenged and sometimes overthrown by strong wives and/ or mothers. This pattern of weak men and strong women consistently appears in the context of a universe governed by natural laws and a narrative framework that questions patriarchal or originary authority in the family, the state, and the universe (Levine, Beer).

Mother Lode:
Technology, Male Midwifery, and Gold-Mining Literature

Professor Blake Allmendinger
Department of English, UCLA

According to Annette Kolodny, the relationships of nineteenth-century men to the western American landscape were gendered and sexualized. Men envisioned their relationships to the U.S. frontier in one of two ways: either they imagined themselves as grown children who received sustenance from a bountiful earth-mother, passively accepting gifts that nature bestowed on them, or they acted like lusty men, actively attacking and symbolically raping the landscape-as-woman, in the on-going quest to tame new virgin land.

The vocabulary used to describe the sites, the technology, and the labor of gold mining, during the California Gold Rush of the late 1840s and '50s, indicates that western gold miners conceptualized roles for themselves other than the ones that Kolodny suggests. The diaries and journals of gold miners, and the history and literature chronicling the early stages of gold mining, reveal that men saw themselves not as rapists and plunderers, selfishly and brutally extracting precious ore from the soil, but as quaint male midwives, facilitating and nurturing the earth's voluntary process of "giving birth" to gold stores.

Gold miners referred to a hardrock deposit of ore as a "mother lode." (The term, originating in 1850-51, referred to the belief that there was a single source from which all gold derived.) When miners found a "pregnant" vein of ore in a "mother lode," they extracted the ore from the vein, then sifted through the extracted ore by using a device that was named to make it seem as if the men had helped "birth" the gold. A sloping oblong box on rockers, without a top or a side on one end, the device had cleats on the bottom called "riffles." Dumping heaps of earth in the box, while pouring water in it and rocking it, men looked for gold chunks that might sink to the bottom and get caught in the riffles while dirt and water rushed out the box through its sloped open end. Nicknamed a "cradle" or "rocker," the box aided men who mined for gold while permitting them to think of their work as a surrogate act for tending a small infant child.

Bret Harte acknowledged the quaint and somewhat misleading manner in which gold miners represented their labor in his famous short story "The Luck of Roaring Camp" (1868). In this, the best known and most familiar example of gold-mining literature, Harte portrays the bachelors as bewhiskered but nurturing caretakers. The boy Luck, whom the miners discover and raise, brings out the same qualities in the men as does the gold, which the men mine and tend. In spite of their charming oddness and apparently quaint eccentricities, Harte's comic characters resemble typical self-representations of miners in nineteenth-century history and western regional literature.

Saturday, November 4, 10:30-12:00 Noon

A. Medicine, Gender and Virtual Technologies **Bel-Air Patio**
Robert Markley, organizer; Laura Sullivan, chair

- Anne Balsamo: "Monsters and Heroes, Mothers and Fathers, Children and the State"
- Timothy R. Manning: "Computer Mediated Understanding of Health Threats"
- Robert Markley: "The Patient's Two Bodies: Medicine, Simulation, and Productivity"

B. Knowledge and Power **Pavilion**
Stuart Peterfreund, chair

- Cynthia Appl: "Heinrich Schirmbeck: Poetics for a Scientific Age"
- David Brande: "General Equivalents and Contingent Knowledge: Ideology and the Desire for Sense in Literature and Science"
- Terrance King: "Writing and Knowledge as Historical Correlates"
- Daniel Cordle: "Articulating Literature and Science: The Core Literature/Science Discourse and the Demise of the "Two Cultures"

C. Sustainability: Postmodern Neo-Ecology **Canyon(HI)**
(Panel Discussion)
Robert Chianese, organizer and chair

Robert Chianese, W. John Coletta, Laura Dassow Walls, Carl Maida and Christine Skolnik, panelists

D. Metaphor and Science II **Westwood(HI)**
Phillips Salman, chair

- Stephen Ogden: "Outflanking Gross and Levitt on the Right: How a Robust Approach to Radical Metaphor by the Literary Culture Can Debunk the Scientists' Own Higher Superstitions"
- Teri Reynolds: "Just Metaphors: Why We Shouldn't Ask for a Literal Use of Science in Interdisciplinary Studies"
- Elliot Visconsi: "A Prophecy Of Escape: Autoreferential Science and the Failure of Metaphor in Pynchon's *Gravity's Rainbow*"
- Andrew Russ: "Killing, Dying, and Surviving in the Mathematical Jungle of Physics: Some Examples of Metaphorical Terms in the Culture of a Science"

E. Embodied Discourse: The Role of Narratives and Visual Images in Scientific Talk and Theories I **Summit**
N. Katherine Hayles, organizer and chair; Brian Rotman, respondent

- Timothy Lenoir: "Machines to Think By: Visualization, Theory, and the Second Computer Revolution"
- Stefan Helmreich: "Artificial Life on the Edge of Inevitability"
- N. Katherine Hayles: "Gender and Game Theory"

F. Technology and Utopia **Metro**
Crystal Bartolovich, organizer and chair

- Crystal Bartolovich: "Cartopia"
- Paula Geyh: "Women on the Edge of Technology"
- Camilla Griggers: "Women and the War Machine"

Monsters and Heroes, Mothers and Fathers, Children and the State

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This paper examines the cultural work performed by the mass media in circulating a set of narratives about mothers and children, drug use and abuse. This work sets the stage for the institutionalization of surveillance practices aimed and certain populations and the criminalization of the maternal body. I also look at the way in which fictional accounts of "public pregnancies" inform the actual practices of public health care workers and research scientists concerned with issues pertaining to fetal health. The paper concludes with a dicussion of the disciplinary consequences of surveillance practices, especially those that solely consider maternal determinations of fetal health to the exclusion of any consideration of paternal determinations.

COMPUTER MEDIATED UNDERSTANDING OF HEALTH THREATS

Timothy R. Manning
Texas A&M University Health Science Center

The application of information technologies in health care delivery contexts must be aided by innovative concepts that help us to avoid the limitations of our existing paradigms. Virtual reality is one of the most powerful concepts to come out of computing thus far. But, many of the concepts of virtual reality are firmly rooted in a realist perspective. So, that which is real is that which is materially substantial. The virtual is not real because it has no substance. So, we may crash the virtual airplane without injury. In fact, it is a popular belief that one of the defining features of virtuality is that it lacks consequences. But, as the philosopher John Dewey has said, "The only difference is a difference that makes a difference." And, of course, it is specifically because there are consequences in virtual environments that we engage them. We learn, or enjoy, we become angry or sad or have a number of other experiences just as we do in real environments. We may say that the virtual has the effect of the real thing without actually being the real thing. But, the most important difference between virtual and real environments is that virtual environment is built to our own specifications. We may produce a jolt when the airplane crashes rather than an explosion.

As we build these environments, either intentionally or unintentionally, we conceive the user in a particular role. In a health care context, we may implement the interests of the physician to educate the patient or to enhance compliance with health promoting behaviors. Or we may place the patient at the center of action, empowering him or her to learn more about his or her condition or to support a medical treatment decision. If the patient has been diagnosed with a life threatening disease, that patient will be trying to build anxiety reducing views concerning the disease. He or she is, in effect, in a world rebuilding process attempting to accommodate the new situation. This process will include development of a personal understanding of the health threat and a new meaning and purpose for life. How can we create an environment that facilitates this process? What concepts can help us create such environment? Part of this must come from a new view of computing. We must move from "the computer as a tool" to "information as an environment." We must move from a focus on the power of the tools to a focus on the richness of the environments. Eventually we will not, except in special cases, speak of computing. Rather, our attentions will return to action and function, but action within a differently constructed reality, a reality that we construct for a purpose.

THE PATIENT'S TWO BODIES: MEDICINE, SIMULATION, AND PRODUCTIVITY

Robert Markley

West Virginia University

Most proponents and critics of virtual reality assume that the technologies required to bring it into being mark a revolutionary advance in conceptions of both the body and the self. In this presentation, I will examine recent developments in medical imaging technologies to suggest that new means of viewing the internal structures of the human body do not escape a gendered logic of representation. In this respect, the heuristic advances made by such firms as Techsplanations and Boston Dynamics depend, as they must, on a metaphysics haunted by moralistic views of death and corruption. Virtual technologies extend what are ultimately antiecological views of human nature, grounded in a neoplatonic conception of the mathematical coherence of "reality." These technologies produce the desire to return to a pristine, natural body; but this body exists, ironically, only as the product of continuing technological and environmental interventions. Precisely because bodies cannot escape their coimplication in ecological systems, efforts to detach "the body" from its environment--to simulate it as, in effect, a fetish--will always be marked by the metaphysical assumptions of mathematics, assumptions which simplify and idealize material existence precisely so that it can be made amenable to representation. To make this argument, I would emphasize is not to attack virtual technologies but to begin the process of locating what they produce--the virtual body--within a complex history of representations of the patient as medical artifact and metaphysical battleground.

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Heinrich Schirmbeck: Poetics for a Scientific Age

Cynthia Appl
University of Pennsylvania

Heinrich Schirmbeck's novel *Ärgert dich dein rechtes Auge* was internationally received. Following the German editions of 1957 and 1958 it appeared in England under the title *The Blinding Light* and in the United States as *If Thine Eye Offend Thee* in 1960 and 1961 respectively.

On a thematic level, Schirmbeck deals with the moral dilemmas and consequences of twentieth-century physics and cybernetics. Figures based on de Broglie and Teller, for example, figure prominently in the novel. The protagonist Thomas Grey, a novelist, is drawn to physics because of its beauty and elegance and decides to write the novel of physics. This sets up a situation in which physics and poetics are linked. The revolutions of twentieth-century physics are discussed in parallel to formal changes in the modern novel. In fact, Grey's theory of the novel is informed by field theory. Grey's discussion of field theory and the modern novel is a self-reflexive gesture on Schirmbeck's part, in that the structure of his own novel can be likened to a field in which all points are interconnected. Every figure, symbol, plot element and detail seems to be related, sometimes mysteriously, to countless others. Schirmbeck's formal use of field theory can be likened to Hermann Broch's use of relativity theory in *The Sleepwalkers*.

Schirmbeck also makes scientific theory fruitful on the symbolic level. De Broglie's wave/particle theory of light is the symbolic core of the novel. Most of the novel's characters are trapped in a dualistic mode of thinking. Grey, for example, is unable to reconcile intellectual existence with emotional and physical life. Other characters acknowledge only spiritual existence and show a marked disdain for the fleshly side of human existence. In this context the recurring image of light as simultaneously wave and particle becomes a metaphor for the unity of life and of the dignity of both spiritual and physical being. Dualism is shown to be an illusion. Opposing categories merely represent two aspects of the same being.

In addition to novels, Schirmbeck has written extensive theoretical material on the role of literature in the scientific age. He believes science to be the source of the major ethical quandaries of our time. Writers must therefore learn about science in order to remain relevant in the modern world. More importantly, however, he urges authors that scientific theory can inspire formal as well as thematic renewal of literature--a concept which his own novels exemplify. Although Schirmbeck like Aldous Huxley, Hermann Broch and others sometimes had difficulty integrating scientific material into narrative, this weakness applies mainly to the integration of science on a thematic level. Lengthy scientific explanations and discussions on the philosophy of science often interrupt the flow of his narrative, but when using science on a formal or symbolic level, as discussed above, Schirmbeck is exemplary.

Since the short-lived success of *If Thine Eye Offend Thee*, however, Schirmbeck has received little attention. Indeed, critics have largely overlooked the modern self-reflexiveness and innovative form of his work, and have classified him as an author of traditional narratives in the classical style. Interestingly, the English and American reviews of his work have been more favorable, perhaps because of a sensitivity developed by the "Two Cultures" discussion and the tradition of utopian/dystopian novelists such as Wells and Huxley. Indeed, Schirmbeck deserves to be considered along side British authors such as Aldous Huxley, as well as modern German novelists like Hermann Broch and Robert Musil.

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General Equivalents and Contingent Knowledge: Ideology and the Desire for Sense in Literature and Science

If the institutional production of the "literary" is the process of bracketing off certain "extratextual" relations--for the purpose of constructing a putatively discrete object of study, a specular object of institutional (mis)recognition--and if the work of defining the literary object is therefore interminable, it is possible to paraphrase Marx when he argues that "the limit of capital is capital itself." Just as capital thrives *on the basis of* its inherent contradictions and crisis tendencies, constantly revolutionizing itself to get on with the circulation of commodities, it is also true that "the limit of the literary is the literary itself." That is, the literary discipline itself is constituted by the impossibility of specifying its object of study.

Far from setting literary study apart from the sciences, it is this lack of a foundational object that ties it to the sciences most closely. "Nature" and "literature" function analogously in the context of ideological fantasies organizing the production of knowledge in their different domains: as "general equivalents" facilitating the circulation of knowledge or truth-value--much as the circulation of commodities is founded on its general equivalent of money. Both sets of disciplinary practices thrive on their interminable struggles to define their objects, much as the body of capital thrives on the insoluble contradiction between productive forces and social relations.

The debate over "realism" and "constructivism," fueled by misconceptions both of theories of culture and text as well as of the epistemologically radical implications of scientific *practice*, mystifies the modes of production of contingent knowledge within the disciplines. Rather, contingent knowledge is best described by the Lacanian notion of ideology, reinscribed at the level of the institutional "subject": ideological fantasy in disciplinary contexts orients knowledge-workers within systems of knowledge-production that depend on fetishized objects of study, which themselves govern (as general equivalents, in economic terms) the production and circulation of knowledge-claims and the realization of "surplus knowledge."

WRITING AND KNOWLEDGE AS HISTORICAL CORRELATES

Terrance King, Wayne State University

The assumption of this paper is that in the modern world knowledge divides into two incommensurate realms: one the scientific (in which the material of knowledge is interpreted as an *object*, something definable in a more or less stable, unitary way and reducible to the invariant and repeatable principles of logic and mathematics), and the other the hermeneutic, in which the material of knowledge is treated as a *text*, a source (as in literature and history departments, judicial institutions, and the like) whose terms of stability are more flexible and less enduring than those of the scientific object. Unlike its scientific counterpart, a text is not ultimately something that can be pictured as giving up secrets lying intrinsically within it; it is more like a site of conversation regulated by terms of narrative and authoritativeness conventionalized within a particular institution. The reason that the terms of stability governing the hermeneutic text are comparatively so flexible and transient is that its meaning is based as much on the historical—and therefore unrepeatable—terms of institutional protocol as on its own material (i.e., its written signs).

To be sure, from the semiotic approach I use in this paper, both scientific object and hermeneutic text are to be treated as institutional constructions, but this is not the same thing as saying that their differences are merely socio-historical fictions. Indeed, my historical investigation here will be realist insofar as it will refuse to reduce the differences between object and text to only historical contingency. I want to suggest rather that object and text correspond to—and here I use Peirce's distinction—two fundamental ways in which regularity seems to occur in human experience: the first as reversible law (a case where, as in mechanical physics, principles seem to return again and again to the same static, self-identical condition) and the other as irreversible law (of principles that govern a life form, a language, a political order and so on and that seem inherently evolutionary inasmuch as they recur to only the ineluctable condition of their own change).

More specifically, this paper will use the ideas from literacy/orality studies (Eric Havelock, Walter Ong, Alvin Kernan) to study the development of the scientific and the hermeneutic in history. It will treat writing, not exactly as a direct cause of this development, but as a correlate of it, since before the arrival of writing, the scientific and the hermeneutic remained mostly undifferentiated functions within human semiosis. Once writing did come upon the scene, however, there occurred profound changes in the way cultural memory was constructed and the way language in general represented the world, effects that help make possible the separation of scientific and hermeneutic functions and ultimately their growth into distinct institutional labors. For it was mainly through the written word that mathematics was now possible, and therein were the beginnings of scientific labor. And on the other side, it was also the written word that made the phenomenon of the sacred text possible, and thereby not only all the world's major religions, but also the specialized hermeneutic competence upon which each of these religions would depend. After the arrival of the printing press and other capitalist technologies of the early modern period, the two institutional labors matured into self-conscious and competing traditions.

ARTICULATING LITERATURE AND SCIENCE: THE CORE LITERATURE/SCIENCE DISCOURSE AND THE DEMISE OF THE "TWO CULTURES"

Daniel Cordle
Leicester University, England

The purpose of this paper is to explore the ways in which changing notions of knowledge have determined the relative positions of literature and science within the culture since the Enlightenment.

In order to explore the consequences of these notions for literature and science criticism I will suggest that as critics we tend to draw on a "core literature/science discourse". This is comprised of all the literary and scientific artefacts that go together to create our understanding of literature, science and their interrelations; for literary critics it divides into three main strands: literature, science and literary theory. Whenever we articulate the discourse we tend to draw on assumptions about the history of each of these elements.

I will describe one influential version of this history which suggests that all three strands have undergone an equivalent three-phase development since the Enlightenment: from relative certainty about knowledge, with reality located in a stable, objectively-knowable world; through a period of crisis when the emphasis shifted to the observer's individual perception of the world; to what we might term a "postmodern" incarnation, where reality exists in a more problematic sense, in a dialectical relationship between observer and observed.

I will show how the positions of literature and science within the culture shift in rough concordance with the development of this history. A particular focus of the paper will be the ways in which early developments in the history presuppose the "two cultures" divide between literature and science which eventually arose, and how later stages have enabled the development of critical tools to contest this cultural schism. It is hoped, therefore, that a direct focus on changing assumptions about knowledge will show how the relationship between literature and science is consequent upon them. Our current assumptions about knowledge allow a greater understanding of the dialogue between literary and scientific cultures than had until recently been possible.

Sustainability : Postmodern Neo-Ecology

Joint Abstract for this Special Panel

Panel: Robert Chianese, English, California State University, Northridge
(Panel Organizer)
W. John Coletta, English, University of Wisconsin--Stevens Point
Laura Dassow-Walls, English, Lafayette College
Carl Maida, Research Anthropologist, U. C. L. A. / Rand
Christine Skolnik, English, The Pennsylvania State University

"Sustainability" is the capacity of any system to provide for human needs by using renewable and non-toxic materials and processes, while preserving biodiversity. Sustainability is an emergent concept, arising out of science, environmentalism, economics, technology, and the humanities. Its varied disciplinary-based formulations do not by themselves convey its capacity to re-order paradigmatic thought in many areas. Therefore, the panel with audience participation will discuss and debate the interdisciplinary ramifications of sustainability as a challenging and problematic concept, influencing contemporary literature, semiotics, urban ecology, social history, and other fields.

Panelists will discuss topics growing out of the following propositions:

Sustainability attempts to reconcile environmental preservation and human production by making technologies earth-based. This bridging, arcing function draws consciousness back to the physical world, positing radical forms of re-seeing and re-voicing our relationships to it.

Sustainability values the specifics of place and region-based solutions to resource issues, echoing postmodernist attention to plural, multi-voiced expression. Unlike modernist technological strategies, sustainability takes a "conservatist," bio-centric outlook about our interventions, because it cedes the complexity of the natural processes and the difficult nature of representing them. Language, metaphor, modelling in this new interdisciplinary eco-science take on postmodern flavors.

With the modernist shift to viewing edenic nature as a human-caused wasteland, literature and the arts developed styles of fragmentation and fracture. Sustainability forces artists to search for new metaphors, myths and forms of expression that begin to reassemble the fragments in a dynamic interactive system and search for new ways and values to negotiate the gap between mind and world.

OUTFLANKING GROSS AND LEVITT ON THE RIGHT: HOW A ROBUST APPROACH TO RADICAL METAPHOR BY THE LITERARY CULTURE CAN DEBUNK THE SCIENTISTS' OWN HIGHER SUPERSTITIONS.

Stephen Ogden
Library Computer Systems
Simon Fraser University

Paul Gross and Norman Levitt's Higher Superstition explicitly perpetuates C.P. Snow's caste division between a superior scientific and an untouchable literary culture that knoweth not Science, "subjective beyond hope of redemption."

By demonizing an opposition they call post-structuralist, or The Academic Left, Gross and Levitt cast all study of the significance of metaphor for understanding science into the outer darkness.

An effective strategy for reaffirming the equality, even the eminence, of literary culture against Higher Superstition kinds of belittlement is to present the case for a metaphorical understanding of science in terms amicable to Gross and Levitt. Consequently, Coleridge's encompassing system of radical metaphor will be re-presented in the form of scholarship and degree of rigour that Higher Superstition claims exclusively for science. And faithful to the religious metaphor the two scientist's adopted for their book, Owen Barfield's extension of Coleridge's position will show the current scientific attitude to be a strict form of Idolatry.

While the academic left conduct any form of defense they see fit, Gross and Levitt will here be triumphantly outflanked on the right.

JUST METAPHORS: WHY WE SHOULDN'T ASK FOR A LITERAL USE OF SCIENCE IN INTERDISCIPLINARY STUDIES

Teri Reynolds
Dept. of English and Comparative Literature
Columbia University

I often hear the phrase "But we don't want to use science as just a metaphor!" in discussions of interdisciplinary studies. My question is--why not? What constitutes the "just (pun intended) metaphorical" use of science in interdisciplinary studies, and what else might there be? Is a less metaphorical "use" of science possible, and why is this an appealing idea? Are the ways in which later scientific ideas like chaos and information theory can be used, in some sense, more "literal" than the ways in which, say, relativity or evolutionary theory can be used? Or is this simply a misperception based on the familiarity (and coincidence) in the humanities of terms like "chaos," "information," "organization" and "system"? How do theories which postulate a spirit of the age to account for cross-disciplinary similarities differ --in their use of and claims about metaphors– from those which postulate a direct transfer of information?

A Prophecy of Escape: Autoreferential Science and the Failure of Metaphor in Pynchon's *Gravity's Rainbow*.

Elliott Visconsi
UCLA Department of English

In Thomas Pynchon's massive text *Gravity's Rainbow*, Lyotard's notion of a postmodernist "incredulity towards narratives" is clearly articulated as the Enlightenment notions of narrative structure, interpretation, and metaphor are all problematized as illusory constructs unable to vindicate their providential claims. As Rocket-questing Enzian suggests, "no society can protect, never could- they are foolish as shields of paper." According to Katherine Hayles and others, one of Pynchon's most profound tropes is his attention to the failure of metaphor to provide any real security even as metaphorical structures such as Science and History claim to stave off the "bright angel of death." Pynchon problematizes both the metaphoricality of discourses like Science and the nature of metaphor itself, suggesting that metaphor is merely a hollow promise, and that the reader, "in bondage to falling, rises on a promise, a prophecy of Escape." Pynchon does recognize, self-reflexively, the irony of his position as an author who uses a metaphorical construction to illustrate the failure of metaphorical systems, particularly the idea of modern Science, dependent as it is on Enlightenment epistemology. Apparently promoting a vision where "at last the apple is apple-colored. The knife cuts through the apple like a knife cutting through an apple," Pynchon deconstructs the metanarrative of Science as autoreferential and self-legitimating. According to Lyotard, "It is recognized that the conditions of truth, in other words, the rules of the game of science, are immanent in that game, that they can only be established within the bonds of a debate that is already scientific in nature, and that there is no other proof that the rules are good than the consensus extended to them by the experts." Science, in *Gravity's Rainbow*, fails to recognize its own self-legitimating and socially constructed discourse, opting instead for "the meanness, the cynicism" of rationality which transforms Kekulé's apocalyptic, organicist Dream into the spatial structure of a benzene ring. In light of failed metanarratives such as Science, Pynchon establishes an epistemology somewhat like Donna Haraway's notion of "situated knowledge." Preterition becomes the epistemological basis for a system in which "The rest of us, not chosen for enlightenment, left on the outside of Earth, at the mercy of a Gravity we have only begun to learn how to detect and measure, ... -finding in each Deeper Significance and trying to string them all together like terms of a power series hoping to zero in on the tremendous and secret Function whose name, like the permuted names of God, cannot be spoken. .....to bring them together, in their slick persistence and our preterition...to make sense out of, to find the meanest sharp sliver of truth in so much replication, so much waste." Truth, even the meanest sharp sliver, is dependent not on massive and self-justifying metaphorical systems like science but on the preterite, localized assembly of "plastic trivia." In this paper I look at three things: Pynchon's assault on an autoreferential and apocalyptic Science, Pynchon's illustration of the transient and illusory nature of Metaphor, and the postmodernist epistemology of preterition, paranoid interconnection, and "situated knowledge" as articulated by *Gravity's Rainbow*.

KILLING, DYING, AND SURVIVING IN THE MATHEMATICAL JUNGLE OF PHYSICS: SOME EXAMPLES OF METAPHORICAL TERMS IN THE CULTURE OF A SCIENCE

Andrew Russ
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An occupational or corporate culture can develop its own slang vocabulary beyond necessary technical jargon. These terms are often appropriated from everyday language and used in a metaphorical sense. I will explain the use of terms such as "kill", "die", and "survive" as they are used in the context of doing the mathematical work of physics. The metaphorical usage is not a necessary part of science, nor a useful rhetorical strategy, but rather a part of general discussion in the field. Sometimes the physics culture use of a term, such as "die", may coincide with an everyday use, such as when a sound "dies off". Also, there is at least one use of these terms in physics -- "Killing vector field" -- that appears metaphorical but is not.

"Embodied Discourse: The Role of Narratives and Visual Images in Scientific Talk and Theories"

Organized by N. Katherine Hayles
English Department, UCLA

Very often scientists think of narratives and images as accessories or precursors to theorizing. Although such aids may be useful in the preliminary stages, they drop by the wayside once a field has become "scientific," that is, once it has been formalized into mathematical expression. The presentations in these panels will challenge the adequacy of this account of scientific theorizing by looking at a series of case studies exploring the roles that narratives and visual images play in scientific talk and theorizing. The first panel will focus on narratives and images associated with computer technology. Timothy Lenoir, a well-known historian of science in the History of Science Program at Stanford University, will argue that computer visualizations have in effect changed the nature of scientific theorizing. Stefan Helmreich, a graduate student in anthropology from Stanford University who is completing an ethnographic study of the artificial life community, will talk about how narratives surrounding artificial life get mixed in with the simulations themselves, especially with regard to reproduction. In exploring the gender implications of game theory, Katherine Hayles from UCLA will discuss the role that computer simulations played in the shift of emphasis from competition to cooperation in game theoretic analyses.

The second panel will focus particularly on visual images and mathematical diagrams. Sally Jacoby, a graduate student from UCLA in Applied Linguistics, will discuss her field work on how scientific researchers prepare and critique "viewgraphs" for public presentations. Kenneth Knoespel, chair of the School of Literature, Culture and Communication at Georgia Institute of Technology, will talk about the role of diagrams in mathematical discourse, particularly geometry. Finally, Brian Rotman, the distinguished semiotician of mathematics who two years ago gave the plenary address at SLS and author of two major books on the semiotics of mathematics (*Signifying Nothing* and *Ad Infinitum*) will serve as respondent for the presentations on both panels.

"Machines to Think By: Visualization, Theory, and the Second Computer Revolution"

Timothy Lenoir
History Department, Stanford University

Graphic methods and technologies for visualizing the objects of scientific investigation occupy a time-honored place in scientific research. While they are for the most part treated as aids to experimental inquiry or as tools useful for displaying relationships between variables, techniques of visualization have only occasionally been promoted as crucial to the development of theory itself. Science has traditionally been described in terms of analytical theory and experiment. A new form of scientific practice is emerging in many fields in which computer experiments occupy equal status with both analysis and laboratory experiments. In molecular biology and in pharmacology, for instance, the separation between computer simulation and laboratory experiment is increasingly difficult to draw. Visualization has substantially transformed and extended the domain of theorizing in these areas in ways impervious to older, non-computer basedforms of theorizing. My project is to explore certain episodes in the early developments associated with the introduction of computer modelling and visualization techniques in organic chemistry in the 1960s and '70s and their sophisticated elaboration by the late 1980s. Published scientific papers, technical reports, and archival materials at Stanford, MIT, and Princeton will provide the documentary basis for exploring the larger claim of the study: specifically, that along with this highly heterogeneous and hybrid form of computer-based experimentation and theorizing has come a different conception of theorizing itself, namely one based on models of information-processing and best captured by the phrase "knowledge engineering."

The claim of this paper is that the introduction of computers into areas of science, particularly in biomedicine, have in a relatively short period transformed the way in which theory is constructed -- and possibly the very notion of what constitutes theory itself. The paper argues that a driving force behind this trend is the desire for and increasing emphasis upon methods of simulation and visualization enabled by the link between communications technology and computers.

Artificial Life on the Edge of Inevitability

Stefan Helmreich
Department of Science and Technology Studies
Cornell University

Artificial Life is a new scientific discipline dedicated to capturing in computer simulations the formal properties and evolutionary trajectories of organisms and populations. Some researchers in this field claim that programs that mimic organisms can be considered instances of real life in a virtual universe. During anthropological fieldwork I conducted among Artificial Life researchers at the Santa Fe Institute, I found that this claim was supported not only by technical arguments, but also by a set of entwining narratives about primitivity, life, kinship, gender, and reproduction. Researchers used these narratives to construe and construct their "digital" organisms as alternative life forms tracing and charting new histories and futures _in silico_. In an intriguing reflexive move, some Artificial Life researchers also took care to craft a place for their own biographies in their stories of the evolution of new artificial, virtual life forms. Briefly, they saw themselves both as pawns and as agents of a larger evolutionary force. They claimed that just as their biological bodies were vehicles for their genes, so the projects resulting from their scientific work were vehicles for the creation and replication of future non-carbon based forms of life. The advent of Artificial Life, they maintained, was an inevitable part of (human) evolution itself. In this piece, I will discuss exactly how this story was constructed by my informants, how it intersected with narratives used to describe computational processes, how it relied on masculine tropes of reproduction, and how it scientized and secularized Christian millennial tales.

Gender and Game Theory

N. Katherine Hayles

English Department, UCLA

When John von Neumann and Oskar Morgenstern argued in *Theory of Games and Economic Behavior* (1951) for the advantage of using mathematics to model economic behavior, they were re-enacting a scenario of formalization that has happened in many other fields as they become "scientific." In this scenario, narrative and natural language are seen as necessary but messy precursors to arriving at a mathematical model. Once the model is achieved, the story goes, narrative can be left behind, because the model can then be manipulated formally to generate results and give predictions. This presentation will use game theory to argue that the received view of formalization gives an inaccurate and incomplete picture of the richly complex interactions between narrative and nonlinguistic symbols. Narrative is always instantiated and contextual, in contrast to the decontextualization effected by formalization. Because it is instantiated, narrative contains more assumptions and possibilities than the formal theory can encode or even acknowledge. Narrative thus can, and often does, serve as a resource that theory can use to renew or re-invent itself when its prevailing assumptions come to be felt as too restrictive or limiting.

Game theory originated in the desire of John von Neumann and Oskar Morgenstern to formalize economics. To create a mathematical theory, they needed to define terms and demonstrate principles that could act as a foundation. These included the transitivity of human desires; the idea that everyone is a rational actor; the construction of rationality as the desire to maximize utility; and the proposition that actors cannot communicate effectively with one another, because they do not know whether anyone else is telling the truth or lying. These assumptions emerged in the immediate post-World War II era when the hysteria of McCarthyism and the threat of the Cold War made them seem reasonable ideas about how human beings behave. Having constructed a theory based on these assumptions, von Neumann used the theory to create a cottage industry that ground out scenarios of Cold War interactions for the Pentagon. Thus a feedback loop was created between the theory and the society from which it sprang. The social conditions made the theory seem reasonable, and the theory reinforced the social conditions that had produced it.

CARTOPIA

Crystal Bartolovich
Carnegie Mellon University

At its emergence as a distinct genre of thought and writing in the sixteenth century, utopianism borrowed the conventions of travel narrative-- especially accounts of "new world" voyages--linking the two practices. "Cartopia" examines the mapping projects that accompany early colonial projects and compares them with recent citations of colonial maps in the annual reports of transnational corporations. The unhappy convergence of (neo)colonialism and utopianism suggests a "dialectic of utopia" along the lines of Horkheimer and Adorno's theorization of enlightenment which can be seen at work in both early modern utopianism and post-modern corporate attempts to re-imagine the world in their own terms. Cartographic technologies have played crucial roles in "utopian" attempts to imagine "other" spaces. "Cartopia" argues that a critical cartography is needed to interrogate these gestures.

WOMEN ON THE EDGE OF TECHNOLOGY

Paula Geyh
Southern Illinois University

"Women on the Edge of Technology" explores the recent emergence of "techno-feminism" in literary and critical works by women. Historically, feminist utopias--and dystopias--have tended to follow out the logic of the traditional gendering of technology as masculine by privileging the organic (cf: ecofeminism, and the various forms of feminist neo-paganism--goddess worship, magic, etc.). Such utopias have left unexamined crucial questions of how a feminist ethic might transform the present uses and future development of technologies. This paper looks at how Marge Piercy's feminist utopian novel Woman on the Edge of Time both critiques the ideology of "pure science"--"never to ask consequences, never to consider a broad range of effects, never to ask on whose behalf..."--and constructs an alternative paradigm for the development and implementation of new technologies, particularly information and bio-technologies. The emphasis in Piercy's work is on sustainable technologies implemented through a form of radical democracy which reconfigures present-day relations between technology and power. While focusing primarily on Piercy's novel, the paper also connects it to the more recent work of theorists such as Donna Haraway.

Women and the War Machine

Camilla Griggers
Carnegie Mellon University

This presentation analyses popular filmic representations of the FEMININE CHARISMATIC MILITARY LEADER emerging in popular film in the '80s and '90s. Films representing militarized or predatory women such as the Alien series, the Terminator series and La Femme Nikita, are placed in the cultural context of the systematic military recruitment of women. I'll discuss some of the gender turbulences resulting from the militarization of the feminine.

The concept of MACHINIC PHYLUM from the works of DELANDA and DELEUZE/GUATTARI will be applied to the military-industrial-labor complex, so that women's role within the war machine (as a predatory system) can be analyzed. The notion of machinic-assemblage suggests both the ways in which human social bodies are integrated into a culture's global dynamics and the particular component roles these bodies may play. The notion of a WAR MACHINE suggests the ways in which human-machinic assemblages organize and regulate predatory and sacrificial functions within culture or between cultures, as well as the ways in which social bodies are inscribed and rationalized according to those functions.

My premise is that state reterritorializations of the feminine in postmodern cultural formations cannot be adequately calculated without some attempt to map the breakdowns occuring in this contemporary collision course between the two concurrent yet distinct cultural flows of becoming-woman and becoming-predatory. This presentation maps the dynamics of that collision in regard to the military's accession of female substitute bodies precisely at a time when the state is in contention with women over abortion practices and combat status, while the military's advanced research groups are removing humans from the "decision-making loop" of advanced predatory weapons-systems.

Saturday, November 4, 2:00-3:30 PM

A. Visual Images II: Rhetoric in Visual Format **Metro**
Dain Borges, chair

- Julian Bleecker: "Building A Better Dinosaur: The Special FX of Technoscience"
- Miranda Paton: "Seeing How to Listen: Constructing the Criterion of Fidelity in Early Phonography"
- Michael L. Merrill: "Jacob Riis vs. the Eugenicists: The Visual Rhetoric of Biological Reductionism"
- W. J. T. Mitchell: "Dinosaurs, Totemism, and Modernity"

B. Entropy, Information, Misinformation and Noise **Pavilion**
Stephen Potts, chair

- James R. Saucerman: "Entropy as a Source of Terror in the Tales of Edgar Allan Poe"
- Lance Schachterle: "Low Entropy and Worse Communications in Pynchon's *Vineland*"
- Eric White: "Signifying Noise: The Crop Circle Phenomenon"
- Jay A. Labinger: "Entropy as Time's (Double-Headed) Arrow in Stoppard's *Arcadia*"

C. The Human Genome Project II **Canyon(HI)**
Barbara Heifferon, chair

- Karyn Valerius: "Genetic Consciousness? Sequencing the Genome and Reconstructing Ourselves"
- Paula Haines: "Popular Science: Controlling the Truth in the Human Genome Project"
- Val Dusek: "DNA as Language: Essence vs. Deconstruction"

D. Narratives of Non-Human Others II: Narratives of Artificial Intellects and Cultures **Bel-Air Patio**
Nicholas Gessler, organizer and chair

- Michael Dyer: "Computer Understanding and Invention of Textual Narratives"
- Marc Damashek: "Implications of Ignorance Based Processing: A Language-Independent Means of Gauging Topical Similarity in Unrestricted Text"
- Nicholas Gessler: "Generating Automatic Narratives in Artificial Cultures"

E. A Guest Session with Octavia Butler **Summit**
Frances Louis, organizer and respondent

- Octavia Butler (guest speaker): "*Furor Scribendi*"

F. Symmetries: Teaching, Writing, Literature, Science **Westwood(HI)**
Robert Franke, organizer and chair

- Robert Franke: "Changed Outcomes in Science-Based Courses when Using Literature"
- Larry Coleman: "Writing in Science Courses"
- Mary Ellen Pitts: "Writing Process and the Teaching of Science: Two Theoretical Points of Convergence"
- Clive Sutton: "Awareness of the Figurative in Science and Science Education"

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Building A Better Dinosaur: The Special FX of Technoscience

Julian Bleecker
University of California, Santa Cruz

Popularizing the work of technosciences such as genetic engineering through Hollywood film raises the intriguing question as to who gets to make technoscientific truth claims, and how those truth claims are stabilized. This paper begins to address this question through the phenomenally successful film, Jurassic Park. Concerned chiefly with the technical apparati of film known as special effects, this paper argues that "really real" facts of technoscience can be seen as homologous to the "really real" images of filmic special effects. If the filmic special effect produces the appearance of things as they are, then closely investigating the means by which such an appearance is established should yield some novel insights into how such is created within the domain of technoscience proper. That is, the production apparatus known as the filmic special effect provides a hint as to the contingent, artifactual ground upon which the scientific "facts" are made by social beings engaged in crafting apparently "really real" truths.

"SEEING HOW TO LISTEN: CONSTRUCTING THE CRITERION OF FIDELITY IN EARLY PHONOGRAPHY"

Miranda Paton
Department of Science and Technology Studies - Cornell University

This paper is part of a larger project that describes the difficult construction of audiophonic fidelity as a new value for recorded music during the 1910's. In that work, I argue that in order to create a new criterion of appreciation and marketing angle for his firm's phonograph and musical repertoire, Thomas Edison created a novel form of live concert performance that enrolled a witnessing audience in an evaluation of the machine's technical quality. More important, these specialized demonstrations called Tone Tests inaugurated a new type of musical connoisseurship and constrained listening activity that challenged the dominant understanding of recorded music already established by the Victor Talking Machine Company's best-selling Victrola.

The live concerts staged by Edison and Victor were the sites at which the rival firms sought to teach the public to listen to the phonograph and to properly appreciate recorded music. But insofar as these concerts also constituted advertisement aimed at a vast national audience, the majority of which would never attend a live demonstration, the form of listening created in the controlled space of the concert hall would have to be conveyed to an absent listener as well. The present paper focuses on the extension of these live demonstrations beyond individual theaters and shows how the performance practice that directed the live audience's listening experience so carefully in the concert auditorium was also represented to an absent listener through a hardening iconography of publicity photographs, trademarked images and souvenirs.

In their perfected form, these logos and posed photographs represent certain directed practices of music appreciation to the absent listener-as-viewer by assigning him or her a position in the reading of the icon that mirrors his or her proper role in the listening experience favored by each company. These specialized images and documents worked not only to convey meaning, but also to direct their readers' activity and experience with the machines and accompanying discs, phonograph dealers, a network of institutions managing American musical culture and to the unfamiliar new celebrity, the recording "star." To successfully interpret a set of Edison or Victor images or souvenirs was also to learn how to listen to their machines, how to enjoy this new form of entertainment and how to participate in America's burgeoning "high" musical culture.

Refining a scheme of representation for the new criterion of fidelity proved just as difficult as the development of a concert practice that would school audiences in an emergent form of music connoisseurship. The phenomenon of fidelity demonstrated in the Tone Test performance evolved only slowly out of older concert and demonstration practice, as well as changes in the phonograph market, Edison's personal philosophy of recording and the exploitation of certain technological features already built into the Edison phonograph and discs. Similarly, the system of images signifying and directing the special form of listening conveyed in the Tone Test hardened gradually, well after concert practice had been perfected. The brief history that I want to present here retraces Edison's uncertain steps toward a new form of representation for his nascent form of listening.

Jacob Riis vs. The Eugenicists: The Visual Rhetoric of Biological Reductionism

Michael L. Merrill, UCLA

In opening his *Applied Eugenics*, Paul Popenoe singles out for derision one of the most influential turn-of-the-century progressives: Jacob Riis. At the "Human Betterment Conference" of 1914, Riis has spoken out against what he saw as the creeping geneticism of his contemporary progressives. Riis felt that the emphasis that once had been placed upon social amelioration was now cast upon "Inheritance! Inheritance!" Though Popenoe mentions Riis just this once, I will demonstrate how his eugenic textbook's visual presentation Popenoe sought to overturn Riis's most noteworthy legacy. Riis's photographs had portrayed the inhabitants of Manhattan's Lower East Side as at the mercy of their environment, adrift in a milieu of buildings and social forces. The photographs used by Popenoe, I will argue, attempt to isolate the individual from both the physical and social environment, thus reducing him or her to the sum of his or her genes. Ironically, due to this attack we can more fully appreciate Riis's achievement; and by examining the admittedly crude tactics of the early eugenicists, we can be kept on guard against the similar-- if more subtle-- techniques used by biological reductionists today.

DINOSAURS, TOTEMISM, AND MODERNITY

W. J. T. Mitchell
University of Chicago

Science has its explanations of what has been called "the riddle of the dinosaur," but what about the cultural significance of this figure? Paleontological narratives and science fiction novels converge on the importance of the dinosaur as a figure of popular fascination, an emblem of anxieties about mass death, modernization and obsolescence, the violence of consumption, and the consumption of violence. This talk will survey some of the major verbal and visual representations of dinosaurs in literature, film, and scientific illustration, arguing that this creature has emerged as the unofficial "totem animal" of modernity. As a totem, the dinosaur functions as a figure of social unity and socialization, regulation of gender identity (especially important in children's dinosaur narratives), the representation of ancestral "deep time," and taboos surrounding consumption and (re)production.

ABSTRACT

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Entropy as a Source of Terror in the Tales of Edgar Allan Poe

Wolfgang Kaiser, the *The Grotesque in Art and Literature*, speaks of "our awareness that the familiar and apparently harmonious world is alienated under the impact of abysmal forces, which break it up and shatter its coherence" (37). Humans find comfort in knowing the exact rules or limits of their world; when that stability is threatened by disorder, he or she may panic. Therefore, if Edgar Allan Poe wishes to create a sense of terror in his tales, he need only show the breakdown of this expected consistency and show the protagonist, because of this disorder, to be ultimately and inexplicably bound toward his own annihilation. Poe's tales typically present phenomena from the protagonists' own, often disturbingly psychotic, vision as they *perceive* entropy in action. Distortion of natural phenomena and the dissolution of natural coherence are the most immediate causes of terror in many of Poe's major tales and a source of satiric humor in some of his hoax/satires. The reader is often offered a mechanical or psychological reason for the confusion or disorder, but to the protagonist natural law seems subverted. Two of many illustrations are "The Pit and the Pendulum," where the walls of the dungeon change configuration, temperature, and color; and "Morella" where Morella refuses death and continues to live in the child's being. Charles Feidelson's comment about "The Fall of the House of Usher" applies to other of Poe's tales as well: there exists a "kind of suspended motion between the perception of 'simple natural objects' and the neurotic perception of an aberrant world."

LOW ENTROPY AND WORSE COMMUNICATIONS IN PYNCHON'S VINELAND

Lance Schachterle
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Thomas Pynchon's most recent fiction, Vineland (1990), contrasts sharply with Gravity's Rainbow. I argue that Vineland is an exercise in low entropy communications, a calculated inversion of Warren Weaver's gloss of Claude Shannon's Theory of Communications as a coupling of "greater freedom of choice, greater uncertainty and greater information all go[ing] hand in hand." Readers anticipating the high entropy of earlier work are frustrated by Vineland, precisely because the author presents a reality with much less freedom of choice than his previous work disclosed.

Vineland presents a low entropy environment inhabited by people very like each other. They are little differentiated in their energy levels, and thus have little that is novel or arresting to say or do. Indeed, the easy triumph of Reagan-era bureaucratic oppression, Pynchon suggests, results from Vineland's denizens secretly yearning for a loss of distinctiveness. Willingly they submerge their differences in a TV-dominated culture in which their mental energies sink to a lowest common denominator of sitcom re-runs. In Vineland, even the crucial energy distinction between life and death is reduced to the point where whole colonies of the living-dead (the Thanatoids) spring upon around the countryside. Pynchon again points to television for providing a media and mediator that robs Vineland's denizens of the will to direct their lives.

Brock Vond, the deus ex machina manipulator of the novel, used his insight into the unconscious desire of self-declared rebels to lose their differentiation to manipulate all around him:

> Brock Vond's genius was to have seen in the activities of the sixties left not threats to order but unacknowledged desires for it. While the Tube was proclaiming youth revolution against parents of all kinds and most viewers accepted this story, Brock saw the deep--if he'd allow himself to feel it, the sometimes touching--need only to stay children forever, safe inside some extended national Family. (p. 269).

The "extended national Family" contains entropically only the spent energy of a whole once-promising counterculture (glimpsed hopefully by Oedipa Maas in The Crying of Lot 49), now reduced to the ambient temperature and unable to do any new work. Drawing upon William Weaver's formulation of communications entropy again, Vineland is about the absence of "greater freedom of choice [as seen in the characters], greater uncertainty [as seen in the often-cliched plot] and greater information [as seen in overall sense of flatness of the book] all go[ing] hand in hand."

SIGNIFYING NOISE: THE CROP CIRCLE PHENOMENON

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Since the late-1970's, flattened swirled formations of growing grain popularly known as "crop circles" have mysteriously appeared during the summer months in cereal fields across Great Britain. Each season has witnessed a substantial increase over the previous, in both numbers and complexity of the circle formations. In fact, many of the "circles" that appeared by the hundreds in fields throughout southern England during the summer of 1990 were no longer merely circular in form but had come to resemble pictograms or hieroglyphs of unknown and even occult import. Earlier hypotheses by meteorologists and other scientists that the crop circles might be construed as evidence for some hitherto unrecognized form of vortical turbulence in the atmosphere now gave way to speculations attributing intelligence and purpose to the designs in the crops. The circles were thus interpreted in line with the tenets of an emerging "eco-paganism" as portents of an impending environmental apocalypse, and alternatively, as the promise, should appropriate measures be taken in response to these missives from beyond, of a new dispensation which would finally heal the estrangement of culture from nature and thereby bring about a re-enchantment of the Earth.

Although tantalizingly enigmatic designs will no doubt continue to be discovered in British cereal fields for the foreseeable future, the historical development of the crop circle phenomenon probably reached its zenith during the summer of 1991 with the appearance of two extraordinary formations: the first, a complicated figure derived from alchemical thought symbolizing the relationship between order and chaos; the second, a beautifully rendered representation of the Mandelbrot Set. The 1991 season also witnessed the coming forward of various artist-pranksters who were able to make convincing claims of authorship for most of the circles that had appeared over the course of the preceding decade.

The pranksters apparently sustained their hoax for so many years in order to allow for the fullest possible expression, on the part of onlookers taken in by their ruse, of fantasies concerning some transcendental reality from which the circles were presumed to emanate, a putatively transtemporal asituational realm whose purely fantasmatic basis would be evident once the circles' contingent artifactuality was finally exposed. Interestingly, the two culminating formations of 1991-- which can be interpreted as affirming the thesis that vitality and abundance reside along the complex interface of order and chaos, information and noise, meaning and its material transfiguration-- are not themselves fundamentally discrepant with the pranksters' own metaphysical standpoint. Moreover, the eco-pagan circlewatchers, perhaps obliquely admitting their own covert participation in circlemaking, are apt to attribute authorship of the designs in the crops to deities like Hermes, trickster god of interpretation whose messages can never simply be taken for what they seem.

The two perspectives-- the one, a derisively carnivalesque assertion of materiality as untranscendable horizon, the other, a sort of sacred flim flam that contrives auratic experience by means of barely concealed trickery-- thus converge. For both, the crop circles' evidently noisy or ambiguous signifying practice, whose intelligibility depends crucially upon the intervention of actively interpreting agents, in the end signifies, precisely, "noise," or the ineluctable subjection of meaning to the material becoming of the world.

Entropy as Time's (Double-Headed) Arrow in Stoppard's Arcadia

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The phrase "time's arrow" is a familiar metaphoric representation of the second law of thermodynamics. Most physical laws are invariant to time reversal; but the requirement that the entropy of the universe must increase clearly differentiates forward and backward directions in time. The intimate intertwining of the concepts of entropy, disorder and information have motivated many authors and critics to explore the applicability of that law to mentally constructed universes. Tom Stoppard's recent play *Arcadia* (1993) appears to be set in a universe where the law does not hold: entropy increases (or decreases, depending how we define the relation between entropy and information) equally in both temporal directions! Stoppard's communication of this paradoxical state, in both the text and staging of the play, will be the subject of this presentation.

Genetic Consciousness? Sequencing the Genome and Reconstructing Ourselves

Karyn Valerius
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The preface to *The Code of Codes*, a compilation of essays addressing both scientific and social issues related to the Human Genome Project, describes the human genome as "the key to what makes us human, what defines our possibilities and limits as members of the species *Homo sapiens*" (vii). This particular explanation of the significance of the genome project intends to invoke the noble aspirations of scientific inquiry. However, it also assumes that "what makes us human" is a question that needs answering. Why at this particular point in history are our "limits and possibilities," our species boundaries, unclear? And why search for an answer in biology rather than cultural and social arrangements?

In the context of these questions, the proposal to seek for "what is most essentially human" in the human genome looks like a gesture of reassurance. Sequencing the genome will answer these questions once and for all. Yet, thinking of ourselves as sequences of DNA requires a reorientation. How is the proliferation of information about the genome reframing our experiences of our selves and our bodies? This paper will look at how discussions of those issues raised by the genome project require individuals to reorganize their perceptions of themselves to the level of the gene. Yet, I will argue, this fundamentally different relationship to our physical bodies is constructed within familiar cultural narratives which function to naturalize this new perspective. What cultural narratives are invoked in these discussions of the genome, and what are the politics of the social relations expressed by those narratives?

Popular Science: Controlling the Truth in the Human Genome Project

Paula Haines
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A rivalry over the power to control the general public's perception of the Human Genome Project's work and goals has developed between the project's scientists and the popular media. The credibility of both scientists and science's truth claims are at stake in this conflict. As media attacks on the knowledge produced by the Human Genome Project have the potential to result in the project's defunding by the federal government, the scientists involved are concerned to maintain the authority traditionally given to scientific endeavors, as the public's disapproval of the program is a very real threat to those whose research depends on the public's money.

Representations of the project's potentially negative or ethically questionable effects continually appear in the popular press. Stories, some more far-fetched than others, on cloning, genetic engineering, gene therapy and other issues related to the Human Genome Project's area of research have crowded recent newspapers, magazines, films and television shows. Consumers of these narratives are treated largely to the fantastic and sometimes frightening possibilities associated with the project, which nevertheless come to represent the project's work in the public's collective imagination.

As scientists take defensive postures against these narratives, they must defuse the public's concerns over the media's often troubling narratives of genetic experimentation by publicly dismissing them as hysterical red herrings and wild science fiction, and simultaneously reconstruct and enact science's traditional, more appealing narratives of discovery and potential. However, Genome scientists are attempting to retaliate against what they consider to be sensationalistic misrepresentations of the work they are undertaking in their own form of discourse, arguing in technical terms on the basis of what they perceive to be irrefutable facts against what may ultimately be a far more persuasive media discourse of science pseudo-fiction. Within this framework of competing narratives, an analysis of the discursive practices of both the popular media and the scientists associated with the Human Genome Project reveals the attitudes of both groups toward both scientific research and the public at large, and questions the functional link between scientific facts and truth.

DNA AS LANGUAGE: ESSENCE VS. DECONSTRUCTION

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This paper discusses Robert Pollack (molecular biologist, involved in initiation of recombinant DNA safety debate) and his book Sign of Life, which takes the DNA as language idea far more literally than anyone or any other work. Pollack treats DNA, not as a code or a signal system language, but as a contextual language in the full sense, with textuality, literal literary translation, deconstruction, etc. I defend and contrast this view with the account of DNA as information in Schroedinger's classic "What is Life?" book, and with the work of founder of the phage group and informational school of DNA, Max Delbrueck. Delbrueck half facetiously wrote an article on "how Aristotle discovered DNA." Implicit in this is a literal treatment of DNA as essence. I suggest, following philosopher Brian Cooney, that DNA in this theory functions as the traditional "substantial form" of the scholastics. That is, as a form of an individual rather than a universal. This suggests the Human Genome Project hype about DNA as "essence of life" in remarks by David Baltimore, James Watson, etc., can be taken far more literally and technically in detail than is perhaps meant by HUGO media science hypsters. The informational vs. structural schools of molecular biology (Gunter Stent's historical classification of the phage group of geneticists, Delbrueck, Schroedinger, and student James Watson, vs. the x-ray crystallographers, Bragg, Bernal, Perutz, and Francis Crick) has some interesting implications for the copyright vs. patent treatment of intellectual property in genetic research. Briefly, life as machine (structural) goes with patent (Chrakrabarty case), while life as language goes with copyright (Walter Gilbert's attempt to copyright the human genome). However, in contrast to the DNA as code, information, essence, substantial form view, Robert Pollack's view of DNA as full-fledged contextual, natural language suggests rich relations between thought about molecular biology and literature far deeper than the often superficial "metaphorical" treatment of DNA as "code of life" (Borek) or "language of life" (Jacob). The conflict between traditional, "Aristotelian" essentialist theories of life, philosophy, and literature, and post-modernist, deconstructionist theories of philosophy, life and literature is played out within molecular biology in the difference in the technical treatment of the DNA code.

SOCIETY FOR LITERATURE AND SCIENCE
NARRATIVES OF NON-HUMAN OTHERS:
Regular Session B: NARRATIVES OF ARTIFICIAL INTELLECTS:

Computer Understanding and Invention of Textual Narratives

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Abstract: Advances in symbolic and neurocomputing theories and technologies have led to the construction of computer systems capable of understanding, generating and learning human language to a limited extent. In addition, artificial life techniques have recently been applied to produce models in which communication arises in evolving populations of simulated creatures. Here we will examine first how conceptualizations (i.e. the thoughts expressed by language) can be represented in computers as symbolic structures and how computers can be programmed to extract the meaning of simple narrative texts. We will also briefly look at the current state-of-the-art in story invention by computer. Second, we will examine how artificial neural networks can be taught to acquire language from example texts. Finally, if any time remains we will briefly touch on how genetic algorithm techniques have been applied to evolve mobile, sensing and communicating artificial creatures in simulated worlds. We might also touch on related areas of research, which include computational systems with affect and believe states. Such systems are able to make moral judgments, engage in arguments, and be influenced by emotional state. We might also discuss the philosophical consequences of such systems and their very long-range potential impact on literature.

SOCIETY FOR LITERATURE AND SCIENCE
NARRATIVES OF NON-HUMAN OTHERS:
Regular Session B: NARRATIVES OF ARTIFICIAL INTELLECTS:

Implications Of Ignorance Based Processing: A Language-Independent Means Of Gauging Topical Similarity In Unrestricted Text.

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Abstract: Italo Calvino's novel, *If on a Winter's Night a Traveler* described a fictional form of computationally augmented literary criticism. Here, an actual language-independent means of gauging topical similarity in unrestricted text is described. The method combines information derived from *n*-grams (consecutive sequences of *n* characters) with a simple vector-space technique that makes sorting, categorization, and retrieval feasible in a large multilingual collection of documents. No prior information about document content or language is required. Context, as it applies to document similarity, can be accommodated by a well-defined procedure. When an existing document is used as an exemplar, the completeness and accuracy with which topically related documents are retrieved is comparable to that of the best existing systems. The results of a formal evaluation are discussed, and examples are given using various documents in English.

SOCIETY FOR LITERATURE AND SCIENCE
NARRATIVES OF NON-HUMAN OTHERS:
Regular Session C: NARRATIVES OF ARTIFICIAL CULTURES:

Generating Automatic Narratives In Artificial Cultures.

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Societies evolved in silicon giving rise to language and philosophical discourse were described in the fictional narratives of Stanislav Lem's "Non Serviam." Today the computational creation of various forms of artificial cultures and artificial societies is receiving serious attention in military, security, policy, university, and entertainment research. Based upon the paradigms introduced by artificial life, and specifically upon those concepts of multiple-agency and distributed interaction, of the emergence of global patterns from local rules, and of simulated evolution by dynamic natural selection, many formerly intractable complexities in nature have been explicated, explained, and understood. Previously unimagined worlds of evolving imagery have been created by artists such as Karl Sims and William Latham.

Viewed as a philosophy of science, computational anthropology should help to dissolve the historically annoying dualisms of the individual and society, the biological and learned, and the symbol as cause or effect of behavior. It may help to operationalize the concept of *culture* itself. We have progressed far beyond *virtual reality* as data visualization in cyberspace. We are seeding previously unimagined worlds which without further intervention will automatically weave intricate webs of contingency into a fabric in state space. We are on the verge of creating fully involving automatic narratives, perhaps no more or no less artificial than their traditional antecedents, but seemingly with an awesome and immense power to suspend our disbelief.

CHANGED OUTCOMES IN SCIENCE-BASED COURSES WHEN USING LITERATURE

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Traditionally the expectation in many science courses is a mastery of facts and possibly a few concepts. Highest reward comes to the student with a keen memory who facilely can recall abundant facts at exam time. Unfortunately this approach too often sacrifices more ambitious goals, including making science "meaningful" to students, and even the adequate and thorough teaching of scientific concepts.

Incorporating literature into a science course alters the teaching and learning expectations. Through literature some attention is paid to the human dimension of science. Specifically, this approach appears to I) transform a science course into a more "interesting" subject for some students, especially non-science majors; 2) encourage greater internalization and recall of scientific information; 3) allow for the inclusion of value questions in the science course; 4) perpetuate student interest in science even when the course is finished; 5) provide insight into science as a process; 6) possibly facilitate the teaching of science concepts.

Not all science courses easily accommodate the inclusion of literature. Furthermore, how to use literature in the science classroom without sacrificing science knowledge is a challenge in view of traditions and expectations in science teaching.

WRITING IN SCIENCE COURSES

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Traditionally, writing has rarely been assigned in science classes. In physics, for example, the focus has been almost exclusively on solving quantitative problems. Most physicists would agree that problem-solving is the real measure of competence. In some sense that might be correct, but there is still the question of whether problem-solving is the only way to gain that competence.

More recently, science professors have increased their use of writing assignments. Their reasons for doing so are varied. In introductory courses, where the students are from many disciplines, writing helps to change the culture of the classroom, to make it a more friendly environment for those "outsiders" who take science because it is required rather than because they want to.

For upper-level physics majors, writing assignments get at the physics from a direction that is radically different from the problem-solving approach. I will comment on my experiences in such courses and on whether writing assignments seem to help or hinder students' learning physics, or whether an entirely different goal is addressed.

At all levels, writing assignments add an element that is attractive to some, but potentially useful to all. I will discuss the impact of writing assignments in a variety of science courses.

Writing Process and the Teaching of Science: Two Theoretical Points of Convergence

Mary Ellen Pitts
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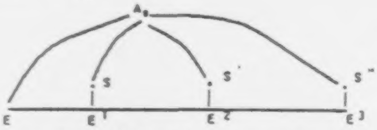
In recent years the teaching of writing has undergone a revolution--from requiring programmed set pieces based on rigid outlining and a kind of template organization to treating writing as process--warts and all. We have come to see that there is no single, ideal route to conveying meaning through writing, that writing evolves, that writing is recursive, and that writing requires a variety of stages: it does not spring full-grown from the head of genius. Drawing on Gerald Holton's *The Advancement of Science, and Its Burdens*, I wish to consider two theoretical points that I believe provide a fruitful comparison of teaching writing and teaching science.

The first point is one that linguists discovered early in this century and that Einstein discussed at almost the same time: the arbitrariness of the relationship between word and thing, between theory or concept and sense experience. For Einstein, "the relation between sense experience and concept 'is analogous not to that of soup to beef, but rather to that of check number to overcoat'" (cited in Holton, p. 14). What Einstein explores is the "fictitious character" of fundamentals in scientific theory. The analogy that I wish to pursue is between the arbitrariness of the link between word and object (or mode of presentation and the idea conveyed) and the arbitrariness of the steps to scientific discovery. In basic science courses the steps to discovery often seem to be taught very much as writing used to be taught, by template: "Did you observe a change in the solution?" "Did the solution turn green?" Einstein, on the other hand, constructed a model of a recursive process by which scientific thought--"nothing more than a refinement of everyday thinking" (cited in Holton, p. 30), leads to theory making. He diagrammed the model in this way:



In this model, the scientist, rather than following a programmed observation of the experiential level, E, observes, but, in the quest to achieve unity from the chaotic diversity of sense experiences, s/he makes a leap--an informed but speculative or "groping" leap--from the multitude of sense impressions to an axiom or generalization, A. The leap may be psychological rather than logical. Then from A, the scientist follows a logical path of deduction to S, the logical consequences or predictions, which are then compared with the experiences at E for confirmation or negation.

This model suggests my second point: scientific thinking involves a recursive process. As in learning to write, one constantly looks backward to confirm or negate possibilities and forward to speculate; the thinker or writer modifies the essay or the theory as s/he engages in the process. In Einstein's model, the scientist is free to make a leap--though emphatically not just any leap--just as in writing the individual is free to make leaps, changes, judgments, though not just any leap from one thought to another.

As we require beginning researchers to fit their work into the model of the scientific report, we need to recognize the important experience with insights, leaps, comparative judgments, and excitement, just as writing teachers must emphasize the arbitrariness and recursiveness that underlie successful writing; both processes give an opportunity to explore.

Paper for the annual meeting of the
Society for Literature and Science,
Los Angeles, November 1995.

AWARENESS OF THE FIGURATIVE IN SCIENCE
and science education

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Science teachers have traditionally paid little attention to the figurative uses of language, except when using analogies as teaching aids. Cast in the role only of 'aids', analogies are treated as a sort of extra for special occasions, rather than as something which is central to the processes of scientific thinking and to those of learning, and an impression is created that the proper or ordinary use of language is a 'literal' one in which things are described as they 'really are'. In this paper I argue that this gives the learners both an inadequate view of language and a restricted view of how scientists work. A much more all-pervasive sense of the figurative is desirable both to convey a better understanding of the nature of science, and to empower the learners with the habits of interpretive reading, writing and speech.

I begin by rehearsing the functions of figures of speech in the development of new scientific ideas, and trace how these fade or 'die' as each area of scientific knowledge matures. What we take to be the 'literal' words of scientific description are in effect the remnants of old figures of speech which have grown so familiar that their earlier metaphorical quality is easily overlooked.

The practical problem for a teacher who understands this development is how to re-activate the dormant metaphors in 'ordinary' scientific language, so that learners may hear again the human voice of scientists who developed the ways of talking which we now take for granted. To re-activate the thought behind any established way of talking, we must get the learners to understand that in science language works as a medium of interpretation and persuasion in the first instance, not simply a system of descriptive labelling. I contrast some features of the 'interpretive' and 'labelling' views of language. I also attempt to show that the conventional separation of 'figurative' and 'literal' cannot be sustained, and that a more subtle understanding of their relationship could be taught.

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Saturday, November 4, 3:45-5:15 PM

A. "Make It New": Modernist Artistic and Literary Responses to Early 20th Century Science **Metro**
Linda Dalrymple Henderson, organizer and chair

- Barbara J. Reeves: "Scientific Modernism--Modernist Science
- Linda Dalrymple Henderson: "Representing the Invisible: The 'Playful Physics' of Marcel Duchamp's *Large Glass*"
- K. Porter Aichele: "Jean Perrin and Paul Klee's 'Atomistic' Cubism"
- Allen Thiher: "Proust and Poincaré"

B. Languages of Early Modern Science: Children and Childbirth **Westwood(HI)**
Richard Nash, organizer and chair

- Eve Keller: "Representing Reproduction in Seventeenth-Century England"
- Debra Silverman: "Mary Toft's Hoax: Narrative Desire, Medical Genius and Female Imagination"
- Richard Nash: "Feral Children and Eighteenth-Century Language Instruction for the Deaf"

C. Popularizing Science **Canyon(HI)**
Yvan Silva, chair

- Jennifer Swift Kramer: "Infotainment a la Gobineau: Notes on *A Gentleman in the Outports*"
- Mark Schlenz: "The Greening of 'Gray Literature': Instrumental Rationality and Communicative Action in Writing for Environmental Studies"
- Laura Dassow Walls: "'Where There is Light There Will Be Eyes': The Theater of Popular Science"
- Jeffrey V. Yule: "Critiquing Science and Its Transmission: Information as Noise in Don de Lillo's *White Noise*"

D. AI and Cybernetics **Bel-Air Patio**
Nancy Barta-Smith, chair

- Ronald Schleifer: "Norbert Wiener, Information, and Postmodernism"
- Phoebe Sengers: "The Implicit Subjects of Artificial Intelligence"
- Elizabeth Wilson: "'Loving the Computer': Cognition, Embodiment and the Influencing Machine"

E. Embodied Discourse: The Role of Narratives and Visual Images in Scientific Talk and Theories II **Summit**
N. Katherine Hayles, organizer and chair; Brian Rotman, respondent

- Kenneth Knoespel: "Diagrammatics and the Interrogation of Mathematical Space"
- Sally Jacoby: "Co-Constructing Visual Narratives in Scientific Practice"
- Barbara M. Stafford: "The New Imagist: Visual Expertise in a Transdisciplinary Multimedia Society"

F. Theory, History and Narrative **Pavilion**
Thomas Cooksey, chair

- Patrick W. O'Kelley: "Gilman and the Creation of a New Empiricism"
- Lucia Palmer: "What is New in the New Historicism of Contemporary Literature, Philosophy and Science?"
- F. Irving Elichirigoity: "Historical Narrative in the Age of Machinic Vision and Computer Simulation: The Emergence of Global Spaces as a Case Study"
- Scott M. Sprenger: "Balzac, Archaeologist of Consciousness: The Case of *Louis Lambert*"

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SCIENTIFIC MODERNISM--MODERNIST SCIENCE

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"Modernism" has been traditionally conceived as applying to a set of transformations in artistic and literary sensibilities and practices around the turn of the twentieth century. While it is risky to generalize, some salient characteristics of modernism are the relativization of previously taken for granted truths, emphasis on perspectives and on traditions as mere conventions, reconceptualizations of time and space, challenges to the Cartesian subject-object dichotomy, and the validation ambiguity, ambivalence, and the irrational.

Extended discussions of the various contexts for modernism often make reference to concomitant transformations in the natural sciences such as relativity and quantum theory, or even consider modernism as the arts that are consequences of the West after Darwin and Freud, or ahistorically as the arts of Heisenberg's Uncertainty Principle, as well as the arts of the world of industrial capitalism or of the world after the destruction of hope and reason in the First World War. Yet rarely considered is the possibility that the late nineteenth and early twentieth century sciences themselves might have been in some ways responses to and interactions with the same sorts of social and cultural and technological forces to which modernist art and literature were responding and with which they were interacting.

In this paper I suggest that we consider the transformations in the natural sciences and philosophies of science not as separate from modernism, but as forming part of modernism as a cultural movement, since the transformations in the sciences share many characteristics with those in literature and the arts. Reconceptualizations of time and/or space were obvious in Einstein's theories of relativity of 1905-1916, but they appeared as well in the work of Lorentz and Poincaré back into the 1890s and in the work of Mach in the 1880s. Poincaré was arguing in the 1890s that mathematics and the sciences did not represent true knowledge in the earlier understanding of those terms, but that they were conventions, widely accepted conventions based on evidence and reasoning to be sure, but not truth. By the 1880s Mach had blurred the subject/object dichotomy, and quantum theory after 1900 and quantum mechanics in the 1920s challenged the certainties as well as the continuities of Newtonian physics with their insistence on probabilities and discontinuities, as well as incorporating the physicist-subject into the measurement process and acknowledging the ambiguity of mass-energy and the wave-particle.

Some of these transformations were thereafter appropriated into modernist thinking and art by modernists like Robert Musil or Virginia Woolf, the latter of whom had no sympathy for what she considered the deterministic bonds of older science, yet who could recognize a kindred species in the modernist sciences.

REPRESENTING THE INVISIBLE: THE "PLAYFUL PHYSICS" OF MARCEL DUCHAMP'S *LARGE GLASS*

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Marcel Duchamp made hundreds of notes in preparation for the execution of his major work, *The Bride Stripped Bare by Her Bachelors, Even (The Large Glass)* (1915-23). Although Duchamp spoke of his interest in "a reality which would be possible by slightly distending the laws of physics and chemistry" and referred to his "playful physics," previous scholars have never examined his notes and the imagery of the *Large Glass* in the context of early 20th-century science. When studied in this light, however, it becomes clear that much of the language of Duchamp's notes as well as the imagery and techniques of the *Large Glass* itself stand as remarkably inventive and humorous responses to contemporary developments in physics, chemistry, and technology.

The science that interested Duchamp, however, was not yet Relativity Theory or quantum physics. Instead, in the years before World War I late classical ether physics still dominated scientific practice and the mind of the public, having captured its imagination as a result of a succession of widely popularized scientific discoveries in the late 1890s and early years of the century. X-rays, the Hertzian waves of the new wireless telegraphy, electrons whizzing at unheard of speeds, and radioactive matter that seemed to dematerialize into the surrounding space--these revelations offered a radically changed paradigm of space and matter, with a new emphasis on events invisible to the human eye. Just as Ezra Pound defined the modern poet as "on the watch for . . . new vibrations sensible to faculties as yet ill understood," Gabrielle Buffet, Duchamp's colleague, recalled of this period, "It would seem . . . that in every field, a principal direction of the 20th century was the attempt to capture the 'nonperceptible.'

If in paintings such as the *Nude Descending the Staircase* Duchamp, like the Cubists, had attempted to portray the invisible reality suggested by X-rays, he moved in the *Large Glass* project to define himself against current painting practices and theory. His goal, as he stated later, was to "put painting once again at the service of the mind." Having read extensively in a variety of scientific fields over several years, Duchamp adopted a laboratory-like technique of artmaking for the *Glass*, whose subject was ostensibly the interaction of the sexes. Here, however, the Bride and her Bachelors are wittily recast as mechanomorphic beings whose activities are based on aspects of contemporary science and technology, including phenomena such as Hertzian waves, radioactivity, atomic theory, and Brownian motion. When Duchamp looked to science, he found there a rich store of analogues for human sexual physiology (e.g., the sparks and vibrations of wireless telegraphy) as well as a fertile source for humorous invention. This paper will address the means by which Duchamp encoded in the *Large Glass* (and its notes) aspects of the new science, including, particularly, the invisible phenomena that fascinated his contemporaries in art and literature.

JEAN PERRIN AND PAUL KLEE'S "ATOMISTIC" CUBISM

K. Porter Aichele
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Did Jean Perrin unwittingly transform Cubism? There is no doubt that Perrin's laboratory experiments definitively substantiated molecular reality and atomic theory. While acknowledging that Perrin would have been astounded by the question posed here, I shall answer this question in the affirmative by positing a link between Perrin's research on Brownian motion and Paul Klee's initial visual response to French Cubism.

Klee's assimilation of any external influence routinely entailed a lengthy process of experimentation, and his investigation of Cubism was no exception. Although Klee saw examples of Cubist work in 1911, he did not adapt the Cubists' innovations to his own artistic vision until the following year. The figures in a group of Klee's drawings from 1912 have been described as "protoCubist" because they are Cubistic in appearance rather than structural form. In fact, "postCubist" would be a more accurate description, for Klee consciously attempted to modify what he perceived as a limitation of Cubism. To do so, he turned, as he often did, to scientific concepts and methodology.

There are striking similarities between Klee's 1912 drawings and Jean Perrin's diagrammatic illustration of Brownian motion. Both visual and circumstantial evidence suggest that Klee discovered in Perrin's diagram a compositional model that allowed him to overcome his objection to the geometric rigidity of the Cubist grid, thus making an original contribution to the stylistic vocabulary of Cubism.

"Proust and Poincaré"

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It has been argued that Proust's A la recherche du temps perdu reflects an interpretation of space and time analogous to that of relativity theory. I argue that this is not due to Einstein, but comes directly from the French critique of Kantian thought, especially in the works of the most famous French scientist of the time, Henri Poincaré. In non-mathematical works such as La Science et l'hypothèse (1902) Poincaré proposed a concept of relativity that was directly accessible and which paralleled the critique of determinism that Proust had acquired in his university studies. Proust's desire to propose an esthetic vision that could escape mechanical determinism finds support in Poincaré's critique of the notion of absolute time and space. Though Proust accepted materialist determinism for all other realms of experience, in art Proust found a "necessary" experience not described by determinism. In creating the doctrine of the non-contingent essences that art incarnates, Proust undoubtedly drew upon Poincaré's explanation of the relative nature of all measurement of the physical world. Relativity allows each artist to be the frame of reference for the artist's necessary truth---independent of other frames of reference that might determine his or her truth if there were an absolute time and space imposing causal relations upon the artist's subjective world. Proust also seems influenced by Poincaré's view that science only describes relations, not things in themselves. And I conclude with speculation that, in the narrator's description of three steeples in "Combray," Proust was rendering ironic homage to Poincaré by showing how an artist could solve the three-body problem, the area of research for which Poincaré was most famous in physics at the end of the nineteenth century.

REPRESENTING REPRODUCTION IN SEVENTEENTH-CENTURY ENGLAND

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The second half of the seventeenth century saw the publication in English of an unprecedented number of midwifery manuals, gynecological guides, and medical self-help books. Written for professional midwives and "gentlewomen" alike, these manuals professed the desire to teach educated, but unlatined women about the anatomy and physiology of their own bodies and about the diseases that were unique to them, particularly those associated with childbearing. Though they tended not to provide the latest information on women's medical care, they did make readily available a vast array of traditional knowledge about the workings of women's bodies. But however much these texts sought to provide an education in self-treatment, they also provided an education in self-perception. Written in English specifically for a female audience, these texts teach more than the traditional "facts" of anatomy and physiology: they offer a reading of the pregnant body that associates childbearing not only with physical but also with moral danger, specifically with one that threatens the normative legal and familial order of society. In their collective attempt to codify and treat the childbearing body, these texts, I shall argue, constitute a form of conduct book that seeks to counteract the inherent perils that childbearing poses, not only to the women themselves, but to the social order.

Mary Toft's Hoax: Narrative Desire, Medical Genius and Female Imagination

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In eighteenth-century England, childbirth provided women with the opportunity to produce fictional narratives about their bodies. I want to argue that this narrative power might have challenged specific, eighteenth-century medical constructions of female desires and female bodies. In his 1751 critique of the Royal Society, John Hill focuses on the power of such narratives when he argues against the discourse of female imagination. Hill spoofs the Royal Society by pointing to some of its more ridiculous published papers, including one entitled "Of a Child terribly wounded in its Mother's Womb" which narrates the story of a child born with a hole in its breast. Hill reports that "eager to have a strange Story in her Family" the mother, at the insistence of her doctor, created a fictional narrative to explain her child's wound. In his comments, Hill juxtaposes two competing narratives--medical incompetence and female imagination--to argue that the Royal Society's belief in the maternal imagination is fanciful. He is eager to dispel the effects of female imagination in order to indict the bumbling, medical practitioner, to erase the woman's story and to replace it with a more powerful discourse of "truth." In this essay, I argue that one particular female body--that of Mary Toft, who in 1726 pretended to give birth to over seventeen rabbits and created quite a scandal--can help illuminate the power of storytelling, and I suggest that her story and the stories her body gave birth to help to bring into focus specific, gendered power relations. In particular, I argue that Toft's case illustrates the oppositional relationship between medical genius and female fancy. As such, her hoax can be made to articulate the conflict between science (a "male" discourse) and fancy (a "female" discourse). The maternal imagination posed a double-bind for women, representing at once cultural power and powerlessness. I argue that Toft's spectacular performance helps delineate this double bind. At the same time, by challenging supposedly rigid cultural narrative her hoax--her narrative of birth--served a prophylactic function, protecting women from discourses of male genius while narrating authorial, female desire.

Feral Children and Eighteenth-Century Language Instruction for the Deaf

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> "He seems to be the very Creature which the learned World have, for many Years past, pretended to wish for, viz. one that being kept entirely from human society, so as never to have heard any one speak, must therefore either not speak at all, or, if he did form any Speech to himself, then they should know what Language Nature would first form for Mankind." (Mere Nature, 17)

Among the many other anonymous works attributed to Daniel Defoe, three in particular have long been associated with one another: Mere Nature Delineated, The Life and Adventures of Duncan Campbell, and The Deaf and Dumb Philosopher. Whether or not any, or all, of these works are Defoe's, they share a common interest in the problem of teaching language to the deaf, and they do so in ways that share a common evaluation of the project, and a common concern over the role of language in distinguishing the limits of human identity. Moreover--and here their interests intersect with the jumble of activities noted in contemporary satires--the problem of teaching language to the deaf resides precisely on the border that separates passionate spectacle from rational speculation. The deaf, according to this model, like other quasi-human brutes, remained trapped within a private interiority of passion cut off from public discourse. Yet that separation simultaneously protects their innocence, forever shielding them from the corruption endemic to society that can only be communicated through language. Language instruction--like Peter, Duncan Campbell, and the orang-outangs, themselves--is figured ambivalently: at once beyond all human art and a despoiling of natural purity. Examining eighteenth-century literary representations of deaf-language instruction, and focussing on a long-overlooked poem by Defoe, this paper will attempt to offer new insights into the generally accepted history of deaf language instruction.

Infotainment a la Gobineau: Notes on A Gentleman in the Outports

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In 1993 Carleton University published a cross-section of populist material written by Count Gobineau. They were in fictional and nonfictional formats, but apparently inspired by a single business trip to Canada. The historical context provided by the translator shows that Gobineau not only wrote "pulp nonfiction" for train commuters, his output was published over the objections of his superiors in the diplomatic community. Of particular interest is how this travelogue is packaged for the modern reader. Notes are included by the translator on crucial, even inexplicable, mistakes found in the original manuscript. Samples of Gobineau's notes and correspondences, as well as some of his short stories are also included. Various dramatic strategies he used are very reminiscent of devices currently attributed to electronic mass media. The fact that his scientific ideas are so clearly unsound becomes secondary to the ways in which he underlined his basic misconceptions about anthropology, genetics, linguistics and geology. Gobineau admitted that science was for him "only a means to assuage a hatred of democracy and of the Revolution." He rationalized a present he detested without apology, as the twilight of civilization. Yet his assumptions inspired the fatalistic reveries that enlivened his reportage. Count Keyserling's The Travel Diary of a Philosopher, a later but comparable publication, was far more successful than anything Gobineau ever wrote. Keyserling does not share Gobineau's pessimism or racial favoritism. However the Diary opts for Gobineau's hybrid structure, fusing mystical speculations and dry scientific paradigms of the day with the novelties of personal anecdotes. Without being reliably able to gauge the impact of those works in their authors' time, one can draw some parallels between their text-only devices and multimedia versions implemented today. Even within the genre of scientific documentary there are variations in approach, with the illustrated timelines of James Burke, Oliver Sacks' romantic anecdotes or Stephen Jay Gould's encyclopedic digressions. The promotional featurette The Making of "A Brief History of Time" goes into some detail about why particular thought problems from Stephen Hawking's book were enacted on the film set; requiring a chicken wrangler, oversized dice, and a full-scale recreation of the scientist's office. These vignettes are too unfinished to be epigrams and too ambiguous to be dramatic sequences, yet they are used not only to illustrate scientific ideas, but to set the stage for a science fiction drama starring the researcher and pop-culture icon Hawking. Dudley Herschbach appeared in a PBS series directed by Adrian Malone, who had previously worked with other scientists on populist material, notably Carl Sagan and Jacob Bronowski. In the series on Nobel winners, Herschbach's sequences were dramatically intercut with a set of monologues by a humanities scholar. The show's construction is synthetic, in the sense that it borrows the element of design "Contrast" from the visual arts. However does it foster, suppress or merely mimick debate? Herschbach's reflections on the filming of his sequences, and on the reactions the finished product drew from his colleagues, are compared and contrasted with his own favorite classroom technique: historical storytelling. May readers find lessons in Gobineau's material and apply them to current methods of popularizing scientific (or pseudo-scientific) theories through mass media conduits?

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THE "GREENING" OF "GRAY LITERATURE": INSTRUMENTAL RATIONALITY AND COMMUNICATIVE ACTION IN WRITING FOR ENVIRONMENTAL STUDIES

In *Ecospeak: Rhetoric and Environmental Politics in America* (Southern Illinois University Press, 1992), Jimmie Killingsworth and Jacquline Palmer remind readers that the Environmental Impact Statement (EIS) participates in the genre of what scientists refer to as "gray literature." Though its features may be defined in part by instrumentalities of science, though it claims validity through the rhetorical authority of science, gray literature is not refereed by the "disinterested" scrutiny of the official scientific community nor does it legitimately contribute to the advancement of research science. As a product of advocacy science, the EIS places critical demands upon the scientific literacies of environmental policy-makers and their affected publics, demands crucial to both the ecological and the democratic sustainability of American society.

My concern in this paper with critical social issues of scientific literacy in ecological discourses—and particularly in discourses of environmental assessment documentation—grows from my experience with the development of an upper-division writing course for students enrolled in the Environmental Studies Program at the University of California, Santa Barbara. In the course Writing for Environmental Studies, rhetorical issues raised by various functions of science in ecological argument and environmental policy debate became inevitably complicated with pedagogical tensions between the professionalizing and humanizing—between the applied technologic and the critical social—aims of a public university education. To confront these complicated issues and conflicts, I draw upon Killingsworth and Palmer's application of Habermas' terms *instrumental rationality* and *communicative action* to rhetorical analysis of environmental assessment discourse in order to explore pedagogical tensions generated by students' competing interests in practices of poetic, persuasive, and technical forms of writing about "natural," ecological, and environmental topics.

In conclusion, I suggest that enlarging opportunities for communicative action within environmental assessment discourses—a process I describe as the "greening" of a "gray literature"—depends upon a reconceptualization of scientific literacy beyond necessary concern for adequate public comprehension of scientific knowledge and its technological applications: the scientific literacy required of greener environmental assessment discourses must also concern the education of a democratic public to critical analyses of the rhetorical uses and abuses of science in ecological debate and environmental policy-making.

"Where There is Light There Will Be Eyes": The Theater of Popular Science

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In Vestiges of the Natural History of Creation, Robert Chambers uses language to rebuild the earth from its primal "elements," showing the steady, progressive change that readied this "theatre" for us. Chambers insists that his book is in "parity" with the "Stone Book" which he reads to us. The geologists who decoded that original book are rendered as ventriloquists, speaking through him, except for those interesting moments when they do not speak with one voice--as in glacial theory, or the process of formation of coal beds. Then the "narrative of nature" breaks down, and in its place the process of science is enacted before us: conflicting evidence, competing claims. Yet Chambers dissolves these tangles with a claim to provisional truth, and the march of progress, as told in stone and in words, is rejoined.

At the climax of his tale, Chambers shows how the very universality of law across deep time means that the laws now familiar to science extend through all space as well. The organic world extends to the stars, which are peopled by beings just such as ourselves: "life and mental action must everywhere be of one general character." As one single set of laws, set in motion by Providence, produced stars and planets and the earth itself, "so one set of laws overspread them all with life." The organ that reveals this to be so is the eye, structured everywhere the same in "direct and precise relation" to our single sun. Thus coherence in the material world guarantees coherence in the mental and spiritual worlds, all bound by that single primordial set of laws; "Where there is light," Chambers declares, "there will be eyes."

Thanks to the heroic industry and reason of scientists, where there were no eyes, now there are--our eyes, peering into the deep past. The book we hold in our hands produces it before our eyes, in the theatre of the mind, even as, in the parity that governs the universe, God produced the theatre of the globe and readied it for our appearance and agency. Chambers' readers are both witness and creator of the unfolding spectacle although, like Melville's whale, no single individual has more than a fragment in view: Chambers' other worlds are those other minds, reading through eyes like our own, unapproachable except in the virtual reality created on the common page.

Readers of Chambers were also readers of novels, and the peculiar intimacy of reading applies to both science and literature. The universe, the deep past--precisely what cannot be seen--is made visible in our minds' eye, internalized. In Chambers' own "fiat lux" we see what Richard Brodhead calls the "reconcentration of self into sight," only the spectacle is not the plot of a novel but what Edgar Allan Poe in Eureka called "God's plot," the only "perfect plot" there is. But the textual authority Chambers claims in authoring this fiction of science was unacceptable to scientists who were still debating, in their own privatized theatres of proof, about what kind of "life" should be made available as consumable object. Nevertheless, the romance of Chambers' narrative seduced readers everywhere, belying the delicacy and fragility of the networks of science with its singular power of explanation, ramifying until it extends everywhere, filling all space and all time with a single community of meaning.

Critiquing Science and Its Transmission: Information as Noise in Don DeLillo's White Noise

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Don DeLillo's postmodernist fiction takes as one of its subjects the problematic position of the sciences in American culture. In his novel White Noise, DeLillo presents a precocious fourteen year-old named Heinrich who has a particular concern with the average American's estrangement from science and technology. Heinrich's main comment on this estrangement is a flawed but apparently common-sense critique of American culture's relationship to the sciences-a critique, which, in the novel's context, raises several related issues bearing on the limitations inherent in scientific specialization and the dissemination of scientific knowledge in contemporary culture. In this paper, I both respond to Heinrich's critique and examine its failings in order to come to a fuller understanding of an estrangement that, in addition to agitating Heinrich, has also captured the attention of a variety of scientists, historians, and sociologists. I show that the concerns Heinrich raises result from the existence of separate, increasingly specialized scientific disciplines whose findings are not only unnecessarily misrepresented to general readers but to scientist-readers in other disciplines as well. I further find that the existence of such a situation only reinforces the necessity of the sort of disciplinary border-crossing advocated by such critics as Michel Foucault.

Ultimately, the failure of Heinrich's critique results from his tendency to equate science with a body of facts rather than with a means of investigating phenomenon, an equation which lies at the root of a popular misconception about science that, in Heinrich's case, results from both the manner in which the popular press and television depict scientific inquiry and the manner in which science is too often taught in the United States. By addressing the flaws in Heinrich's reasoning, this paper more effectively addresses his main concern-the average person's estrangement from the sciences-as well as the factors that cause Heinrich to be unaware of the importance of scientific method to the sciences.

In accomplishing these goals, I draw on the writings of physicists Kip Thorne and Steven Weinberg, zoologist and geologist Stephen Jay Gould, biologist Ernst Mayr, and historian John C. Burnham to establish the parameters of my treatment of scientific method, the relationship of scientific specialization to the practice of science, and the role of the popular press in disseminating scientific knowledge. In tying the general issues raised by Heinrich's critique to a specific, ongoing scientific inquiry, I examine the recent and exceptionally crossdisciplinary investigation of the mass extinction event at the boundary of the Cretaceous and Tertiary periods-the so-called K/T extinction-as a case study in the relationships between scientific specialization, professional publication, and popular press and television coverage of the sciences. In analyzing these relationships, I rely on the work of a variety of scholars who have researched both Luis Alvarez's attribution of the K/T extinction to the impact of an iridium-rich meteorite and the effects of this attribution on the involved sciences. Among those scholars on whom this analysis most relies are John C. Briggs (marine scientist and zoologist), Elisabeth S. Clemens (sociologist), William Glen (geologist and historian), Kenneth J. Hsu (geologist), and David M. Raup (evolutionary biologist and geophysicist).

Norbert Wiener, Information, and Postmodernism

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In this paper I examine Wiener's concept of "information" as he describes it in Cybernetics, or Control of Communication in the Animal and Machine and The Human Uses of Human Beings in relation to postmodernity. My argument is that Wiener — and information theory more generally — emphasizes redundancy and abundance and that the "condition" of postmodernity, as some call it, can be best understood as a social and historical phenomenon in terms of finding modes of representation and modes of understanding that can deal with superfluity rather than scarcity. In The Human Uses Wiener touches on a historical reading of "information" when he examines the relationship between the first and second industrial revolutions in the West, and in Cybernetics he asserts that "information is information, not matter or energy. No materialism which does not admit this can survive at the present day." His work then suggests a "postmodernism" where simple binarities, such as that between matter and energy, are exploded into overdeterminations and multiplicities. Reading Wiener, I argue in the paper, can help us situate the concept and phenomenon of "postmodernism" in historical terms.

THE IMPLICIT SUBJECTS OF ARTIFICIAL INTELLIGENCE

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While there is a rich literature documenting the ways that technology affects culture, it is somewhat less common, but equally vital, to come to an understanding of the ways in which our cultural position has become encrusted in the technology we build. The emerging field of Artificial Intelligence (AI) in particular cries out for such an analysis. After all, it is by definition - if not always in fact - the field devoted to the reproduction in the machine of `Intelligence,' an attribute that we have historically considered to be the unique attribute of humanity. A class of AI programs [`agents'] attempts to build complete subjects; in this class we come closest to an image of ourselves, or more precisely, an image of AI researchers' views of what we are. Culture provides the implicit background in which technological options are created and weighed: it circumscribes the kinds of agents that are built, the evaluation of their development, and the debates on the nature of agency within the field.

In this paper, I will examine the history of AI technology to uncover the forms of subjectivity AI researchers implicitly use. Broadly, this history can be understood with respect to a fierce debate between two major trends: <u>classical AI</u>, an older trend which aims to build representational, nonreactive, cognitive agents, based on a model that proposes, for example, that agents are fully rational and that their bodies are a trivial attachment; and <u>alternative AI</u>, a newer class of nonrepresentational, reactive, situated agents which have limited knowledge of themselves and for which their bodies are an important part of their cognition. I show that the implicit model of consciousness for each of these trends is equivalent to a historically broader theory of subjectivity, which I describe and term respectively the <u>Enlightenment</u> and <u>schizophrenic</u> models. This analysis allows me to posit the type of application that each form of technology allows one to build, and to question whether there are interesting forms of subjectivity that are precluded by either current technology.

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'LOVING THE COMPUTER': COGNITION, EMBODIMENT AND THE INFLUENCING MACHINE

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Cognitive science (and particularly cognitive psychology) has been founded on, and continues to be dominated by, a model of the mind as an information processing machine. In such a framework there is a one-to-one mapping between human thinking or cognition on the one hand, and the computation of a machine on the other. In this paper I am not concerned with the arguments for or against modeling the mind on computers, as these arguments are already well rehearsed in the literature. My position here is less one of skepticism about the computer or cognitive science per se, than it is a suspicion about the relation between the two. What is there to love in the computer? What particular attributes make it the desired object for cognitive science? What will be at stake is not whether the computer metaphor adequately describes psychology, but rather how cognition itself is constituted through the idea of a computational machine. Specifically I am concerned with how cognition comes to be constituted through certain dominant fantasies of embodiment that the computer metaphor advances. The paper focuses on Alan Turing's classic essay "Computing machinery and intelligence" (1950), Victor Tausk's (1919) analysis of the influencing machine in paranoid delusions, and contemporary feminist theories of the body. My central questions are these: To what extent does psychology's computational machinery prescribe a rational, containable and disembodied cognition? And in what ways is such a prescription of cognition indebted to the logic of a masculine morphology?

Diagrammatics and the Interrogation of Mathematical Space

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This paper poses questions about the ways that diagrams or drawings are deployed within mathematical discourse. Drawings are like story problems in the ways that they help define the context for a problem. However, at the same time that drawings or words delineate a problem, they may provide figures for the reconstitution of the calculation itself. In my paper, I will suggest that while education continually seeks to stabalize mathematical discourse through demonstration often represented by diagrams, the diagrams also provide sites for the extension of mathematics. Diagrams are not simply ocular confirmations of mathematical notations but spaces that always hold the possibility for discovery.

Although the question of the status of diagrams was raised by Leibniz (see New Essays of Human Understanding (Cambridge: Cambridge Univ. Press), 299 f.] recent studies have challenged philosophers of science to examine the ways that diagrams are deployed within mathematical discourse. For example, Gilles Châtelet (see Les enjeux du mobile (Paris: Seuil, 1993) asks for a revision of simple distinctions between Euclidean and Non-Euclidean space by arguing that we would learn more about mathematical discourse by looking at the operative space presented by the diagrams or drawings frequently associated with mathematical notation. Rather than making a simplistic distinctions between Euclidean and non-Euclidean space, Châtelet argues that space is continually under definition. According to Châtelet the definition or redefinition of mathematical space is not found through language that operates according to certain rules of logic or in the exploration of the physical world. Instead, the most powerful insights and finally the most fundamental character of geometry is found in the manual, quasi-empirical process of diagramming.

Three kinds of questions concerned with the representation of mathematical space are explored in the paper. In the first part I look at the position of diagrams within the history of mathematical discourse giving special emphasis to the status of the diagram in early mathematical texts. How the status of diagrams or drawings change as a consequence of the development of printing technology and computing technology interest me very much and will be among the questions I explore. In the second, I look at the ways that cognitive science approaches questions raised by the deployment of drawings or diagrams in mathematics. Here I will be especially interested in the cognitive paradigms or interpretive fields that influence the constitution of mathematical practice. In the third, I ask about the ways that metaphor may be said to function within mathematics particularly in regard to the representation of space. Although my discussion is theoretical, it will make use of case histories from the history of mathematics.

CO-CONSTRUCTING VISUAL NARRATIVES IN SCIENTIFIC PRACTICE

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Overhead transparencies ("viewgraphs") constitute the narrative backbone of physics conference presentations. Their design, individually and as sets for particular conference talks, incorporates complex combinations of linguistic, graphic, and layout elements which together assist a conference presenter in communicating a dense amount of information and argumentation in a very short space of time, typically ten minutes. As a conference presenter talks an audience through each individual viewgraph and progresses through a set of viewgraphs, complexly nested narratives of science, nature, group, and self are constructed in performance through the intersection of talk, graphic design, and gesture.

But viewgraphs come to look the way they do for public consumption as a result of private backstage interactional processes through which presenters rehearse versions of their conference talks for research colleagues and mentors, then redesign their visual displays in response to feedback. This paper explores scientists' orientation to the narrative power of visual display by following one group's backstage co-construction of particular viewgraphs over successive rehearsals of the same conference talk. The discussion will focus on two generally recurring themes in talk about viewgraphs: 1) adequacy of data curves as visual narratives of the physical argument, and 2) adequacy of collegial credit displays as visual narratives of research history and collaboration. It will be shown that through post-rehearsal discussion of viewgraph design, in which colleagues take the point of view of potential audience members at the upcoming conference, physicists jointly define problems in the narrative construction of a presentation's scientific claims, its newsworthiness, and its place in collaborative networks, then achieve consensus as to how those problems should be remedied in terms of viewgraph modification. Particular sequences of criticisms and remedies raised and negotiated by participants will be linked with successive versions of viewgraphs to show both that visual narrative for public performance is the co-constructed product of private interactive processes and that socio-cultural aspects of scientific practice (e.g., social identity, competition, discourse community, professional competence, and cultural norms) are constituted in situ through the details of face-to-face communication.

THE NEW IMAGIST: VISUAL EXPERTISE IN A TRANSDISCIPLINARY MULTIMEDIA SOCIETY

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While there is a growing awareness that the communications revolution is changing how we learn, little attention has been paid to the complex and sophisticated perceptual expertise this computer-driven shift requires both from specialists and general audiences. Indeed, there is now no adequate name or concept for the new professional who must guide us imaginatively into, along, and through the electronic information highway.

Much work has been done on the technological aspects of imaging, on the design, acquisition, storage, and dissemination of integrated or linked graphic, textual, aural cultural and scientific data, and even on the establishment of documentation standards in the use of digital images for the arts, humanities, and sciences. But the hard epistemological and pedagogical questions still need to be addressed.

This paper, then, explores some of the major roles the future imagist must play and points out the need for a historical contextualization of enduring contemporary visualzation issues. More broadly, it calls for the creation of a cross-cutting imaging field appropriate to an era that seems to be dispensing with isolated disciplines and that is witnessing the implosion of academic institutions.

GILMAN AND THE CREATION OF A NEW EMPIRICISM

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Charlotte Perkins Gilman attempted to take science from the realm of the purely masculine and make it an authorizing tool for women's rights while at the same time avoiding the theological rhetoric that supported most American writers. In Women and Economics and other books, Gilman moved beyond the mystical world of the natural theologian. She worked to displace the vision of women as victims of empiricism or masculinist Transcendentalism. She transformed sociology, psychology, and economics to critique the masculinist world-view which they previously enforced (and which enforced them).

Gilman succeeded in many key rhetorical games. She overturned the usual association (even in her own work) of art and the feminine. She writes that art (not science) "will perhaps always belong mostly to men. It would seem as if that ceaseless urge to expression was, at least originally, most congenial to the male." And she recognized the power of scientific rhetoric in its ability to stand outside all other arguments of authority. In her autobiography she says: "The one real study which did appeal to me, deeply, was Physics.... Here was Law at last; not authority, not records of questionable truth or solemn tradition, but laws that could be counted on and Proved. That was my delight, to know surely."

After it appeared in 1898, Women and Economics went through seven editions and was translated into seven languages (far more widely disseminated than her fiction). And Gilman was in high demand as a lecturer at the turn of the century. But her views were eclipsed just as Einstein, with his masculine romanticism, rose to international fame.

Part of my research will be to open up the relationship between literary-scientific women, like Gilman, and science. How was Gilman able to transform the feminized poet/woman into a scientists? Why, rhetorically speaking, was this briefly respected strike against growing scientific authority ultimately so ignored?

What is New in the New Historicism in Literature, Philosophy, and Theoretical Science

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For better or worse the phrase "New Historicism" was introduced in American Culture by Stephen Greenblatt in 1982, although the term and phrase was already known in literary circles through the works of Wesley Morris in 1972. Greenblatt and his predecessors were at great pain to define the phrase and disentangle it from the paradigm of the old historicism which characterizes 19th century European Culture. As used by Greenblatt the term refers to a "new" literary theory (or a lack of it) which essays to interpret literature within history and tries to establish connections between the two domains. In some of its more ambitious forms the new historicism argues that the autonomous self and a literary text are mere "holograms" produced by historical institutions and defined in relations to a "hostile" other. Almost at the same time the phrase "New Historicism" began to percolate in philosophical treatises and in works devoted to scientific theories. In what follows I begin by "revisiting" briefly the old historicism I argue that there are at least four types: a general tendency to interpret every aspect of social cultural life in historical terms; a methodology for the proper study of history; a metaphysic of history; a theory of knowledge which asserts that nature and values are known through their history. Having established this framework, I turn to a group of contemporary American philosophers who share a number of common assumptions and conceptions developed however in a different way. Richard Rorty, Michael Walzer and Alasdair MacIntyre are all self professed new historicists who agree that human understanding is always captive of its historical situation. Rorty has accepted the implication of his position and reduced the philosophical enterprise to "edifying conversation". MacIntyre has accepted the fact that Justice and Morality have meaning relative to their local standards of practical rationality. Just as the historicists in philosophy and literature insist that the individual or the text be set within some culturally and historical context so post Khunian philosophy of science has abandoned the connection between truth rationality and progress. In the conclusion of the essay I show how this new type of historicism is related to the classical historicism in European culture.

Historical Narrative in the Age of Machinic Vision and Computer Simulation: the Emergence of Global Spaces as a Case Study.

Irving Fernando Elichirigoity
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The last thirty years or so has seen the multiplying emergence of a number of discourses and scientific practices that center on the planet earth as a whole. The discourses consist of reports, publications, pronouncements, policies and documents, generated by private and public entities alike, about the need to think about and solve "global problems". These discourses have emerged concomitantly with novel scientific practices such as satellite imaging and photographic surveillance of natural and anthropogenic phenomena at a planetary level, and computer modeling, simulation, and forecasting of the interactions of human production and the biosphere.

In this paper I will argue that the aggregation of these discourses and practices is constitutive of new global spaces of political, economic, social and cultural action. I will further argue that these discourses and practices of globality need to be understood as mutually constitutive. This latter argument will serve as an explicit critique to some traditions within the Science and Literature area that assume a metaphysics where the "materiality" of the world is separate from the discursive elements alluding to it. Finally the paper will suggest that Bruno Latour's recent notion of "hybrids" is a fruitful concept in tackling the history of planetary management. Overall the aim of the paper is to make a theoretical contribution to narratives of global spaces that aim to capture thenewness and potential of these new spaces.

Saturday, November 4, 5:30-7:00 PM

A. Language, Epistemology, and the Cognitive Sciences I **Canyon(HI)**
F. Elizabeth Hart, organizer and chair

- F. Elizabeth Hart: "The Chaos of Language: Cognitive Linguistics and Complexity Theory"
- Phillips Salman: "Cognition, Poetics, and the *Nous Poetikos*"
- David Porush: "TELEPATHIES: The Advent of the Alphabet as a Model for the Transformation of Communication Promised by VR"

B. The Old New Physics: Quantum Mechanics and Relativity **Westwood(HI)**
Paul Plouffe, chair

- Henry McDonald: "Narrative Uncertainty: Wittgenstein, Heisenberg, and Narrative Theory"
- Timothy S. Murphy: "Beneath Relativity: Bergson and Bohm on Absolute Time"
- Stephen Potts: "The Muse of Uncertainty: Empirical Psychology and Scientific Modernism"

C. The Ontology of Science and the Arts **Pavilion**
Koen DePryck, organizer and chair

- Koen DePryck: "Art as Interdisciplinary Discipline"
- Karel Boullart: "Ontology, Triviality and Metaphorisation"
- Ilse Wambacq: "The Arts and Sciences in Education: Bridging Partial Ontologies"

D. Machine Visions, Body Slices and Video Memory **Summit**
Ramunas Kondratas, organizer and chair

- Ramunas Kondratas: "Imaging the Human Body: The Case of CT Scanning"
- Joseph Dumit: "Functional Brain Imaging, Personhood and the Many Literatures of Neuroscience"
- Barry Saunders: "Rituals of Diagnosis in the Age of Noninvasive Cutting"

E. Feminist Theories of Biology in Fact and Fiction **Bel-Air Patio**
(Panel Discussion)
Susan A. Hagedorn, organizer and chair

Roger Persell, Shoshana Milgram and Susan Hagedorn, panelists

F. Nature, Landscapes, and Voyages **Metro**
Maria Assad, chair

- Vranna Hinck: "Chaos and Christo: Celebrating the Complexifying of the World through Art"
- Janet Bell Garber: "For Fear of Increasing the Confusion: Early Nineteenth Century Attempts to Make Sense of the Natural World"
- Alice Jenkins: "Landscapes of Ignorance: Metaphors, Narrativity and the Organization of Knowledge"
- Philip K. Wilson: "Mechanistic and Vitalistic Perspectives of the Body in Enlightment Voyages to New Worlds"

The Chaos of Language: Cognitive Linguistics and Complexity Theory

F. Elizabeth Hart
The University of Connecticut, Storrs

Critics acknowledge that language plays a role in literary representations of chaos. But none so far has adequately explored the notion that we might describe *language itself* in terms of nonlinear dynamic systems theory. I argue that language *is* such a system, and that it is the chaos within linguistic structures that drives the play of order and disorder within the literary text. This essay examines current interdisciplinary inquiries into metaphor, particularly of interactionist models now being explored in psychology, philosophy, and cognitive linguistics. Interactionism assumes a breakdown of the traditional dichotomy between literal and figurative, and further proposes that metaphor--a cognitive as well as a linguistic process--is the key mechanism behind the generation of larger orders of linguistic structures. Cognitive linguistics has developed a detailed account of how language perpetuates itself through dynamic, metaphorical interactions between the embodied linguistic subject and that embodied subject's physical and social environments. Language, in other words, is a profoundly biological process that enacts the same qualities of complex behaviors found in numerous other biological systems now studied under the rubric of complexity theory, a subfield of chaos theory that focuses on the phenomenon of spontaneous, emergent order. I propose to extend the cognitive linguistics model by demonstrating its profound revision of the way we conceive of language as *system*: specifically, language appears to be a nonlinear, irreversible, and ever-evolving system that generates its own structures through iterations of basic features. These iterations result in cascades of regular but unpredictable linguistic structures--semantic categories, grammatical sites, narrative structures, and intertexual co-incidences.

COGNITION, POETICS AND THE NOUS POETIKOS

Phillips Salman
Department of English
Cleveland State University

In The Poetic Structure of the World: Copernicus and Kepler (1990) Fernand Hallyn defines poetics

> not...in the Aristotelian sense of a system of normative rules, but rather in the sense that one speaks about the poetics of Racine or Baudelaire, namely to designate a collection of choices made at different levels (style, composition, thematics...) by an author or a group (14).

Hallyn appears to overlook Aristotle's definition in De anima of the nous poetikos — the intellectus agens, "active mind" or "active intellect" — which is the origin of all cognition and which is a maker, a poet, in the sense that it actualizes the potential of the mind in the way, Aristotle says, light reveals color to us.

Where Hallyn started with a later stage of a poetics, this contribution works with Aristotle's originary passage and shows all too briefly how, in renaissance literature and science, (1) all cognitive activity results in a poetics for each field of knowledge and (2) the poetics of literature and science necessarily compete, with science seemingly suppressing the fact of its poeticism in order to establish itself as the only source of truth.

"TELEPATHIES: THE ADVENT OF THE ALPHABET AS A MODEL FOR THE TRANSFORMATION OF COMMUNICATION PROMISED BY VR"

David Porush
Rensselaer Polytechnic Institute

The aboriginal phonetic alphabet originated in the Sinai desert circa the 15th century BC. Its transformation of culture included the initiation of new social arrangements, a new metaphysics, a new epistemology, and new relations with the body and nature. It also changed cognitive relations to communication in a way that gives us a good model for understanding how VR is transforming the cognition of reading and communication today. This paper will explore the interlinked feedback loops among body-brain-culture and communication technologies based on an examination of ancient Hebrew culture.

ABSTRACT

NARRATIVE UNCERTAINTY: WITTGENSTEIN, HEISENBERG, AND NARRATIVE THEORY

Henry McDonald
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This paper draws on the late work of Ludwig Wittgenstein to reformulate the traditional distinction between story and narrative discourse, or diegetic and extra-diegetic levels of narrative, as a logically incommensurate distinction between story and narrative act. The narrative act is in Wittgenstein's sense a potentially singular "move" within a language game that deforms or rearranges the pre-existing content or meaning of the story. The critic's ability to describe such deformation is limited by what I call, analogously to Bohr and Heisenberg's concept in physics, the notion of narrative uncertainty.

Like position and velocity in physics, story and narrative act are concepts which have the same empirical basis in the text, yet are incommensurate logically. The notion of narrative uncertainty expresses such incommensurability as follows: the more definite or precise our account of the meaning of a narrative in terms of a single story or plot-line, the more indefinite or imprecise our account of the narrative act. The narrative act is what constructs, or makes, in part, the plot, and the more we take that plot as finished and whole, assigning to it a fixed and reliable meaning, the more we interfere with and "change the values of" what constitutes the narrative act.

What constitutes the narrative act is the cultural act of transmission -- the narrator's conscious and unconscious shaping of the cultural materials inherited as a member of that culture. In so far as that act is singular or non-iterative -- and all language acts, according to Wittgenstein, are potentially so -- it resists the application of a system of "measurement" that would produce fixed meanings. Narrative uncertainty is ultimately a product of the incommensurability of our concepts of time and of our methods of measuring time: of our inability to formulate an unchanging standard for an always changing phenomenon. The "meaning" of a story might in this sense be regarded as a conceptual "measurement"; such meaning, like the position of a particle, must be described atemporally, whereas the act which produced that story, like a wave, must be described in terms of patterns of variation. In so far as interpretation produces "meaning," it produces that which is incommensurate with a process or "action." Such incommensurability is independent of any particular interpretive strategy in a manner analogous to that in which the Heisenberg Uncertainty Principle is independent of particular tools of measurement.

Beneath Relativity: Bergson and Bohm on Absolute Time

Timothy S. Murphy
Department of English, UCLA

Einstein's theory of relativity has been one of the most successful creations of modern science, both within theoretical physics and in non-scientific culture; it has provided explanations of counter-intuitive events, legimated philosophies and acted as the vehicle for countless metaphors. This widespread success makes the theoretical critique of relativity all the more significant. Relativity has always been at odds with quantum theory, another very successful scientific construct, on the issue of locality. Recent experiments in quantum physics have demonstrated the real possibility of non-local interactions, faster-than-light connections between separated particles, which jeopardize the hegemony of relativity by implying the existence of an absolute time-frame or "quantum aether" that is necessary to forestall causal paradoxes. These non-local effects are the focus of David Bohm's "ontological interpretation" of quantum theory, which derives relativity, as a secondary statistical effect, from the absolute quantum aether.

Bohm's recent critique of relativity appears, at first glance, to be different from Henri Bergson's early (1922) critique of Einstein. Bergson claimed that Einstein's appeal to observers in different time-frames was actually asymmetrical, in that only the position of the observer in the reference-frame could really be lived, while the observer in the other, accelerated frame, *as s/he is imagined by the reference-frame observer*, could only be experienced from the outside as a pure, empty symbol. If we look closer, however, we see that Bergson identified Einstein's failure to appreciate Riemann's distinction between types of multiplicities, a failure which produced a model of multiple time-frames that relies implicitly on an absolute time-frame for its symmetrical convertability (i.e., the fact that other accelerated time-frames can be translated into the time of any chosen reference-frame). For Bergson, this meant that the reference-frame was *de facto* an absolute frame, despite Einstein's claims to the contrary.

We find then that Bohm's ontological critique repeats several of the central propositions of Bergson's apparently phenomenological critique. For Bohm, the absolute frame in which non-local interactions take place must be that of the laboratory, which is to say the reference-frame of the observer; any other time-frame leaves open the possibility of causal paradoxes (inversions of temporal order). This is Bergson's point as well: "duration" is an absolute virtual time because it is the only time-frame that can be *occupied* by an observer. This observer, for Bohm as for Bergson, need not be a subject; indeed, they both define "observer" as "whatever reacts or changes in response to changes in its environment," a definition that covers atomic particles as well as people. This presentation will outline and compare Bergson's and Bohm's critiques, and assess their implications for the philosophical and metaphorical economies of relativity.

THE MUSE OF UNCERTAINTY: EMPIRICAL PSYCHOLOGY AND SCIENTIFIC MODERNISM

Stephen Potts
Department of Literature, UC San Diego

In many intellectual and artistic disciplines, the early twentieth century saw a rapid evolution from dominant nineteenth century modes of practice. In fiction, for instance, the formal realism and well-made plots of the nineteenth gave way to the modernist experiments of Conrad, Stein, and Joyce; in mathematics and the sciences, positivist certainty that all could be known and objectively confirmed in the classical sense yielded to the relativities of Einstein and the statistical uncertainties of quantum mechanics.

In her book The Vanishing Subject, Judith Ryan ties literary modernism to the empirical psychology of William James and Ernst Mach. Working on either sides of the Atlantic (respectively in the U. S. and Austria), James and Mach bridged the gaps between physics, physiology, and philosophy by inquiring closely into the means by which human consciousness perceived the physical world. Their speculations and conclusions, widely disseminated in academic circles in the decades enclosing the turn of the century, strongly influenced not only literature and the arts, but the sciences as well. Indeed, the empirical psychology of James and Mach, though working out of positivist methods, laid the foundation for modernist thought across the disciplines. It stands at the cusp of the paradigm shift.

Central to empirical psychology was the place of the conscious observer in the cosmos. As James frequently asserted, thoughts do not exist independently of thinking; they have meaning only in the context of an ongoing and perceptive consciousness. All objects of empirical study, from physical masses and processes to consciousness itself, only exist therefore relative to other objects and to the subject observing them. Mach, and James to some extent, went so far as to attempt to create a space-time geometry with the observer at the center.

Mach's general influence on Einstein is obvious--Einstein did in fact take seriously the observer's privileged position in space-time geometry--though the specific details of that influence become clear only upon close analysis. A like investigation demonstrates Mach's and especially James's influence on Niels Bohr and by extension the Copenhagen interpretation. Bohr's insistence on the role of the observer, and even his assertion that the causality of quantum effects is less important than their mathematical measurability (the notion that so irritated Einstein), can be traced to ideas of empirical psychology.

Thus, many of the revolutionary concepts of modern physics--the privileged position of the observer, the relativity of space-time, Heisenberg's Uncertainty Principle--derive ultimately from the epistemological pursuits of empirical psychology, as formulated by Ernst Mach and William James.

Art as Interdisciplinary Discipline

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In my paper I argue that only the arts can provide a language that is sufficiently rich in its structure to access the fundamental relation between the different levels of complexity of reality—from the mathematical and the physical up to human culture.

"Art," as a motor for evolution, is universal and should not be confined to the human cultural phenomena used to express personal emotions. If one is to take evolution seriously, it should not be confined to arbitrary time slices that have more to do with an essentially anthropocentric stand and with the history of our understanding of reality than with reality as a whole.

This view on art is embedded in a larger perspective characterized by the following statements—each of which will be briefly commented on in my paper:

- that reality is an evolving structure;
- that evolution is underdetermined (nor totaly arbitrary, nor totaly deterministic);
- that the real presence of reality in language and of language in reality is a core epistemic condition;
- that self-reference is an ontic category;
- that language exists at the crossroad of a universal tendency toward increased order and a univeral tendency toward increased entropy;
- that self-reference and paradoxality are the driving forces behind the increasing complexity of an evolving reality.

I will argue that the investigation of the biological and evolutionary foundation for aesthetic judgment, while most certainly meaningful in its own right, gains it full significance against a more comprehensive backgroud of questions related to the interaction among levels of complexity in general. Indeed, the neurobiological processes involved in the aesthetics of vision turn out to be perfect metaphors for the relations among levels of complexity. In my paper, I focus on *texture* as a core metaphor.

Ontology, Triviality and Metaphorisation

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On the basis of "conditions of detrivialisation" it is argued that what can be "said", expressed and/or communicated about the world and its entities -especially man himself- by any epistemic subject of necessity stands in a "metaphorical" relation to reality as far as it is accessible. The underlying process of "metaphorisation" is outlined and it is shown that within the "language" used to express reality "discursive thinking", and consequently science in the strict sense, is a highly special case of a much wider set of "languages" that give rise to different media of expression and communication which are the basis of the "arts" as traditionally conceived.

Accordingly, the general process of metaphorisation as such is further determined by specific and diverse processes of the like kind characteristic of these "languages". In this way an ontological basis is provided, first, for the fundamentally unitary nature of art and science, second, for their inevitable bifurcation into two distinct kinds of "knowledge" and, third, for the variety of the expressive possibilities of the arts.

The Arts and the Sciences in Education: Bridging Partial Ontologies

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I will start my presentation by defining the main characteristics of traditional education in terms of the ontological assumptions (or the lack thereof) underlying curricular and pedagogical approaches.

Traditional education is challenged by many authors and educational alternatives. In particular, I want to explore some of the implications for education implicit in the theoretical framework by Koen DePryck (Knowledge, Evolution and Paradox: The Ontology of Language, Suny Press 1993). This framework and its implications are being experimented with in the Institute of KnowledgeManagement near by Brussels, Belgium.

The program includes the following ingredients, many of which are essential to the very existence of the SLS:

- Integration of verbal and non-verbal language
- Non-propositional character of knowledge
- The non-lineair dynamics of teaching and learning
- The nature of creative thinking, with particular emphasis on the role of metaphors
- Interdisciplinarity, not as the use of techniques of one discipline in another, but as the investigation of relationships among disciplines themselves.

IMAGING THE HUMAN BODY: THE CASE OF CT SCANNING

Ramunas Kondratas
Smithsonian Institution

During the last half century there has been a revolution in medical technology, which has given us several new and very powerful imaging modalities for looking into the body. In addition to X-rays, we now have ultrasound, CT, MRI, and PET scans. These technologies are not only powerful diagnostic tools. They also raise interesting social and cultural questions about the nature of our humaness and the meanings - medical, mental, and legal - that these images portray.

At the Smithsonian Institution's National Museum of American History we have been trying to document and contextualize this revolution in medical imaging by collecting the key instruments, related scientific and trade literature as well as video and oral histories of the people who have invented, built, distributed, and used these instruments.

In this presentation I would like to describe how we have attempted to document the history of CT (computed tomography) scanning, the kind of information and products which have emerged from this project, and some of the uses for this material.

Functional Brain Imaging, Personhood and the Many Literatures of Neuroscience

Joseph Dumit
Harvard Medical School

PET brain scanning promises to provide images of living brains "in action" as they think, speak, add, get sad and go mad. Just over twenty years old, this high-tech brain-mind-mapping technology has achieved prominence in experimental neuroscience and clinical medicine, but also in courtroom insanity defenses, and on the over of popular magazines like Newsweek. These multiple domains of cultural relevance are one of the main challenges in collecting primary sources for the history and context PET's emergence. In order to provide contextual information for historians and lit-critters of the next millennium, the often contrasting literatures of mental health activists, jurists, movie producers and science journalists, as well as marketers, regulators and researchers are each vital.

Working as an historian, archivist and anthropologist of PET scanning, I am engaged in a process of mapping these interactions in vivo. My central thesis is that functional brain images are not simply objective, technological pictures of personhood, nor do they just reflect changing attitudes commensurate with social priorities regarding research; they also actively help to define and reinforce social identity. In this way, rain imaging itself constitutes a discourse that is changing notions of scientific and technological domains, human categories, and personal identities. The roles of high technology and glossy visuals in this negotiation of humanity are set in the context of professional production and the production of professionals. I track how facts and images about the brain work, how people, including scientists, use them to understand themselves and others, and especially how these facts and images work across different communities, shaping their dialogues.

RITUALS OF DIAGNOSIS IN THE AGE OF NONINVASIVE CUTTING

Barry Saunders
UNC Department of Social Medicine

This presentation introduces an historical and ethnographic study of Computed Tomography. "CT scanning" holds a privileged position in medicine's celebrated imaging revolution, as well as in the broader cultural history of bodily representation. But the prestige of CT (or imaging) cannot be accounted for merely in terms of clinical utility. In the hands of its radiological priesthood, CT renders the body transparent; it has revolutionized the reading of entrails; it has produced new experiences of illness and expertise, and new forms of truth. CT materializes a diagnostic "gaze"--a visuality which maps disease in space.

A gaze is not simply a viewing: tomo-graphy in particular specifies cutting and writing as well. Tome, graph, and visuality continue to collaborate in the hospital, as they have in other historical contexts and other magico-religious settings, in defining bodily contours and ritual suites of practice. CT, ostensibly a technology for revealing the interior of the body, inevitably illuminates and rewrites the diagnostic environments of the hospital--and other wider social formations.

If CT "corresponds" with postmortem autopsy--in terms of evidential persuasiveness and professional intrigue--, there are also different sensibilities at stake in its refiguring of cutting and writing in the diagnostic process. Sectional anatomy is different from surgical anatomy, as mode of craftwork or display. Divisions of labor within radiology, and between radiology and other clinical disciplines, sponsor forms of guild thinking and ritual interaction different from those of, e.g., the traditional clinico-pathological conference (legacy of the 19th-century clinic). CT also specifies different relations of patient with institution--by revising the relevance and representability of the patient's testimony, as well as patients' self-conceptions as spaces of surveillance and structural deviance. Most important, CT is typically deployed antemortem. Its revolutionary status presumes its proximate substitution for, indeed its displacement of, cadaver-truth. Relations between CT-mapped lesions and death are often contingent, partial, probabilistic.

This presentation extends familiar concerns of Foucault and Benjamin, among others, to the radiographs, "readings," and charts of 20th-century biomedicine: some of CT's most crucial effects have to do with redistribution of the authority of death. Ritual studies can approach this redistribution by describing not only evidential texts, but also the craft-practices which produce and display them. Indeed, such rituals of specimen-exhibition have never been confined to institutions like the hospital...

FEMINIST THEORIES OF BIOLOGY IN FACT AND FICTION

Roger Persell, Hunter College
Shoshana Milgram, Virginia Tech
Susan A. Hagedorn (Panel Chair), Virginia Tech

From the turn-of-the-century sexual essentialism of Patrick Geddes and J. Arthur Thompson's Problems of Sex to Evelyn Fox Keller's A Feeling for the Organism and the current work of many feminist theorists, a great deal of effort (and print) has been expended attempting to explain gendered differences in behavior, thought, achievement, etc., through differing forms of biological determinism: the belief that men and women simply are innately different.

Feminist theories of biology criticize the "patriarchal," limited foundations of modern biology: where traditional "male" theories are said to stress hierarchies and competition between organisms, some "feminist" theories appear to embrace an almost intuitive inter-relatedness. Interrogating the premises and the practices of the field in order to identify and analyze its "social construction," some feminist critiques have attempted to dismantle the message, the messengers, and the methodology.

Panel members will address the validity of these feminist theories of biology, using illustrations from both scientific research and extrapolations of the theories into speculative fiction. Writers such as Kate Wilhelm, James Tiptree, Jr., Joan Slonczewski, Octavia Butler, and Pat Cadigan, among others, present a range of attitudes regarding the nature and degree of differences--in values, in skills, and in cognitive approaches--between women and men, as contrasted with the differences between humans and aliens. After brief individual presentations, the panel will invite discussion from the audience.

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Hunter College
New York, NY

Shoshana Milgram
Dept. English
Virginia Tech
Blacksburg, VA

Susan A. Hagedorn (Panel Chair)
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Virginia Tech, Blacksburg, VA

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Chaos and Christo: Celebrating the Complexifying of the World through Art

Vranna Sue Hinck
Montana State University

Like most of his work, Christo's extravagant and ephemeral 1991 "Umbrellas" installation along California's Highway 5 interrupted commonplace expectations for pragmatism and predictability in the world. The surprising "technological sunflowers" on the golden California landscape both made nature stop looking like itself and also, at the same time, look more like itself. The finished project and the process of its realization challenged current expectations that place nature and technology in opposition and through their intermingling suggested alternative ways of thinking and seeing.

Christo's work illustrates how the aesthetic can open up a space in which it becomes possible to see, feel, and experience reverberations between the whole and the parts, the gestalt and the partial, and, at the same time, between internal details and the pattern of their interrelationships. The "Umbrellas" express ideas in visual form that resonate with psychologist James Hillman's definitions of beauty as a "fitting order in the cosmos," recent descriptions of the world arising out of dynamical systems theory and Victor Turner's notions of ritual and *communitas*. This presentation will show the "fitting order" of parts and whole in various aspects of this installation. By creating something of a performance community itself, the presentation will also provide an opportunity to experience the effects of what Victor Turner terms *communitas* (albeit somewhat vicariously). Finally, it will show, by example, how chaos theory can be a useful heuristic device for describing and critiquing visual art.

The intent of this presentation is to provide a multi-sensory and interactive experience of Christo's work (though admittedly a second hand one) and to explore how visual art can provide opportunities for us and the world available to us to become more complex. Participants will experience the surprising impact of this installation as well as the rhythms and beauty of the images and the performance community in which they were brought to life.

"FOR FEAR OF INCREASING THE CONFUSION": EARLY NINETEENTH CENTURY ATTEMPTS TO MAKE SENSE OF THE NATURAL WORLD.

Janet Bell Garber, Ph.D.

In his Appendix on `Pisces' to Captain Phillip P. King's Narrative of a Survey of the Intertropical and Western Coasts of Australia, 1818-1822 (1826), J.E. Gray of the British Museum wrote that "Captain King has presented the Museum seven or eight other sorts of fish (than those named) in spirits, and several interesting drawings, which I have not hitherto been enabled to find in any of the works on Icthyology, but so little is known of the genera and species of this department of Natural History, that I am not inclined to describe them as new, for fear of increasing the confusion at present existing."

Gray reflectedthe general problem experienced by systematists in Europe since the Renaissance, of accommodating new species into the plan of creation. Considerable relief was provided by Linnaeus in the mid-eighteenth century, but his system soon ran into criticism for its inability to accommodate new species brought by the Spaniards from South America, the French from Africa and Asia, and by the English from Australia and the Pacific.

This paper concerns the attempts by naturalists in the field and in museums to communicate both their discoveries and their confusions, and their attempts to bring order to the chaotic array of specimens of animals and plants and microscopic organisms during the first 59 years of the nineteenth century, before Darwin's Origin. W.S. Macleay, Thomas Bell, Richard Owen, T.H. Huxley, James Dwight Dana, and Albert Newton are some of the naturalists who attempted to bring Nature to heel.

Landscapes of ignorance: metaphors, narrativity and the organisation of knowledge

Alice Jenkins
University of Liverpool, U.K.

This paper addresses current critical interest in two topics: allegory, and the role of spatiality in scientific and literary writing. Spatial tropes have been inherent in a range of discourses in English from at least theseventeenth century, and have very close links with allegorical writing. Though drawing heavily on Christian scriptural traditions, spatial metaphors nonetheless have long been capable of absorbing and expressing a great variety of aesthetic, political and social concerns. By the 1810s, for instance, spatial metaphors in English were affected by such diverse recent and contemporary phenomena as orientalism, land enclosure and burgeoning imperialism.

This paper focuses on spatial tropes as they were used in connection with questions of education and acquisition of scientific knowledge during the early nineteenth century. In order to indicate the availability of these metaphors to writers working in a variety of genres and for widely diverging audiences, the paper compares passages from Coleridge's *Biographia Literaria* and Michael Faraday's early lectures. Each passages creates a detailed and complex landscape allegorising the transition from ignorance to understanding; my paper discusses these landscapes in the context of the rhetorical and literary traditions to which they appeal, and will show some of the ways in which images based on landscape features have been used to organise arguments simultaneously into narrative form and into epistemological categorisations. Earlier writings of Johnson and Kant will be invoked as validatory modifiers of spatial metaphor in moral and philosophical discourses.

Mechanistic & Vitalistic Perspectives of the Body in Enlightenment Voyages to New Worlds

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Early eighteenth-century natural philosophy was primarily formulated in the light of mechanistic philosophy. Actions within the body were typically explained in mechanical terms of forces, powers and causes. Although rival fractions formed between groups of mechanists, they nearly all invoked Isaac Newton in their writings. Following Newton's death (1727), the mechanical explanations of invisible actions gradually gave way to more "quasi-vitalistic" theories. The vitalists accepted man-machine analogies only to a point, beyond which they resorted to Nature as the explanation or cause of action. Specifically, vitalists claimed that body functions originated from a hidden, vital, spiritual, unknowable ultimate "cause" which had been provided by the Creator.

Mechanistic and vitalistic perceptions of the body pervaded eighteenth-century writings in fields including medicine, animal economy, natural philosophy, political economy, law, theology, and literature. The varied views of the body in the speculative writing about life in imaginary worlds has been widely overlooked. I address this historical void by examining what the authors of several key fantastic voyages claimed about the physical makeup of "the other" they encountered in imaginary worlds during the Enlightenment.

For this presentation, I explored the imaginary imagery of the body described in B-Le-B. Fontenelle's *A Plurality of Worlds* (1686), Gabriel Daniel's *Voyage to the World of Cartesius* (1690), Christian Huygens's *The Celestial Worlds Discover'd; or, Conjectures Concerning the Inhabitants, Plants, and Productions of the Worlds in the Planets* (1698) Daniel Defoe's *The Consolidator; or, Memoirs of Sundry Transactions from the World in the Moon* (1705), Jonathan Swift's *Travels into Several Remote Nations Of the World* (1726), Ludwig Holberg's *A Journey to the World Underground* (1741), F-M-A.Voltaire's *Micromegas* (1752), and Emanuel Swedenborg's *The Earths in Our Solar System* (1758). These works have been investigated to answer three questions:

1) To what extent were the inhabitants of imaginary worlds perceived to be physically different from people on earth?
2) Did these extra-terrestrial inhabitants conform to earth-like mechanical or vitalistic physiological functioning or did the authors use variation in body functioning as an aid to help cast their creations as "the other"?
3) Do the authors's explanations of physical life on other-worlds suggest particular philosophical, literary, religious or socio-political motivational influences?

KEY WORDS: Man-Machine, Imaginary World Voyages, the Body, the Other

Sunday, November 5, 8:30-10:00 AM

A. Cybernetics in Literature: Subjects and Subjectivities **Westwood(HI)**
Kevin LaGrandeur, organizer and chair

- Kevin LaGrandeur: "Who Sounds the Thunder?: Prospero's 'Machine' and the Anxiety of Agency"
- Vivianne Casimir: "Pascal and Frankenstein: A New Subjectivity"
- Sarah Higley: "Scientists and their Androids in Science Fiction: Edison, Dennett and Hawking"

B. The Role of Anecdote in Science **Metro**
(Panel Discussion)
Frank Durham, organizer and moderator

Marcella Greening, Thomas J. High, Kathryn Montgomery Hunter and Linda Layne, panelists

C. The Female Body in Medical Discourse and Literature **Canyon(HI)**
Carol Colatrella, organizer and respondent

- Tanya Augsburg: "Resisting Diagnosis: Staging the Female Medical Subject in Contemporary Women's Performance"
- Johanna X. K. Garvey: "'And She Had Made Herself!': (Re)generation of 'Woman' in Acker, Weldon, and Carter"
- Roger Persell: "Human Eating Disorders: The Drama of Clinical and Literary Discourse"
- Linda Saladin: "The Rhetoric of Surgery: Narratives for Patient Well-Being"

D. Bruno Latour: Pre-Modern, Modern and Non-Modern **Pavilion**
Richard Grusin, chair and respondent

- T. Hugh Crawford: "Mapping Migration: Some Thoughts on *Moby-Dick*, Matthew Fontaine Maury, and Bruno Latour"
- Philip Lewin: "Bruno Latour and the Image of the Human"
- Ned Muhovich: "Bringing Pym Home: Structure in Poe's *The Narrative of Arthur Gordon Pym*"
- Brian Noble: "The Evolutionary Saga of Human Liberation: Buried Nature/Culture Discourses in William Haviland's *Anthropology 7th Edition*"

E. Science and Society II: Ethics, Conscience, Ideals **Sico A**
Dale Pratt, chair

- Thomas Martin: "Ivan Karamazov's Vision of the Science as the Necessary Source of Miracle and Mystery for the Subjection of Man"
- John Bragin: "Scientific Witness and Moral Visionary: Primo Levi and the Culture of the Nazi Holocaust"
- Raphael Sassower: "Post World War II Technoscience"
- Yvan Silva: "Mahatma Gandhi: The Armamentarium of Non-Violence"

Who Sounds the Thunder?: Prospero's "Machine" and the Anxiety of Agency

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Keywords: Prospero's "Machine"

My talk is an examination of Prospero's control of his environment in *The Tempest*, and of how his methods evoke part of a larger issue that, as I see it, has pervaded Western society for centuries: the anxiety that we will lose control over supposedly servile systems which our most advanced sciences allow us to bring forth. In particular, Shakespeare's play, written at a time when hermetic magic was still considered a science, evinces the fear that the creation of any "intelligent" system will pose problems of control for its creator (a set of problems around which the whole modern field of Cybernetics revolves).

Though Prospero presents himself as the agent by which his ends are accomplished on his island, closer investigation reveals that his "science" of occult magic is only a remote cause of events. For instance, the wizard tells his daughter in Act I that it was he who caused the storm that strands his brother's party on the island, when in reality, as we see later in the Act, he was totally dependent upon Ariel and his sprites for its cause and for information about it. The actual agency by which action occurs on Prospero's island is, for the most part, the "machine" or "organism" that the wizard has fashioned of the island's inhabitants--who themselves represent complex, reflexive systems, and so become difficult to control.

Prospero's constant (mis)representation of himself as the cause of all that happens acts, in effect, as part of what cyberneticists would term his "feedback mechanism" for the "machine" he has created. To use Norbert Wiener's definition, Prospero's dissembling is part of a mechanism he has devised "to control the . . .tendency toward disorganization, in other words, to produce a temporary and local reversal of the normal direction of entropy" in a given system (*The Human Use of Human Beings* 24-25). Yet, the very fact that Prospero feels compelled to use prevarication as one of the two major mechanisms of control over his system (the other is threats), points to the more important part of my thesis--that Prospero's modes of command are emblematic of the anxiety that scientists feel about their creative dominion. I plan to explore this by brief references to other literature (both fiction and non-fiction) about "emergent" autopoietic systems: organisms or mechanisms which, though they start as allopoietic (ie., as "servant mechanisms" for their creators), show disconcerting elements of reflexivity and "self"-concern.

Pascal and Frankenstein: A new Subjectivity

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The question of machine/organism and human/non human seems in the postmodern period to have been transformed to a question of subjectivity. This is what can be observed in *Blade Runner* and *Star Trek: The Next Generation*, for example. To be "alive" is a matter of having a consciousness and language acquisition abilities, whether we talk of an android or of some other form of artificial intelligence. But in my view, this notion of subjectivity becomes a receptacle for anything and reveals a sort of anthropomorphism. In Zola's and Shelley's texts, the relations of machine/organism and human/non human are problematized in a way that challenges this very notion of subjectivity. I propose then to look at the question of subjectivity through a different epistemological angle and speak of "discursive subjectivity" to oppose it to the psychoanalytical concept which refers to consciousness and language.

The relations machine/organism and human/non human visible in Zola's *Doctor Pascal* and Shelley's *Frankenstein* are transcended from the start into a completely different understanding of subjectivity that I call discursive and which does not rely on consciousness. It must be understood in terms of an ontological position in the discourse that allows characters to be represented as such; it is a condition of being functional in the narrative. In other words, even if Pascal, the main character in Zola's novel, theorizes on a mechanical and an hereditary basis to account for the "living," it remains that on a discursive level he needs to have a similarity with his family in order to be a subject and to be represented as such; without a similarity, he simply does not exist discursively. Shelley's novel is about the human/non human distinction, and the monster must find his position in this frame. But on a discursive level, what is at stake is the condition of existing, being a subject, in terms of visual and verbal signs. Characters interact with the monster on the basis of the visual sign (his appearence) and the verbal one (his speech). However, the monster can exist discursively only because of the non-resolution of the dichotomy between visual and verbal signs.

My point is that the dichotomy between signs (Shelley) and the idea of similarity (Zola) are simply conditions of existence/figuration that allow characters to be represented in the text. This discursive subjectivity has its roots in the question of human/non human and machine/organism, like in the case of *Blade Runner* and *Star Trek*, but moves away from the notion of consciousness and language acquisition that seems to define the "living" in popular culture. The discursive subjectivity becomes an epistemic figure which allows to speak of representation of characters.

Scientists and their Androids in Science Fiction: Edison, Dennett and Hawking

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Keywords: Scientists and their Androids

There is a legend that, in the Middle Ages, Albertus Magnus created a metal servant that his student Thomas Aquinas destroyed because it was an instrument of the devil (and it drove him mad with its incessant chatter); tales of the sixteenth century Rabbi Leow of Prague associated the scholar with the making of a golem; Paracelsus claimed in his *De Rerum Generatione* that he himself could make a homunculus; and in the nineteenth-century, Villiers de l'Isle-Adams wrote *L'Eve Future*, in which Thomas Edison, prtrayed as a kind of evil sorcerer, creates and ensouls an exact dupilicate of his friend's beautiful but stupid fiancee. This novel marks the end of a tradition that goes back as far as the *Romavisaya*, a ninth-century Pali text that lumps Hero of Alexander (author of the *Pneumatica*) with the King of Rome, emporer of a nation of robots and their imprisoned technicians. It offers intriguing suggestions about the development of science fiction and its troubled relationship with science "fact," and also an important link between fictions involving the android today with early hermetic lore and the development of science.

The legendary connection of the robot with an actual scientist goes in new directions in the twentieth-century: an aura of necromancy surrounds the nuclear physicist (Oppenheimer); physical scientists write android stories (Asimov); cognitive scientists create imaginary duplicates of themselves (Daniel Dennett in his famous lecture "Where am I?"). And Stephen Hawking, already a kind of "cyborg" that has captured the imagination of millions, has appeared with Data on *Star Trek: The Next Generation*, as himself, or rather his image, called up in the holodeck.

I will concentrate, in my presentation, on these popular stories of the humanoid robot which are attached to legends of historical persons and famous scholars. In particular, I shall focus on the Villiers de L'Isle Adams, Dennett, and Hawking stories, giving briefly the background for various "historical" goems, and focusing on how all of this leads to a twentieth-century preoccupation with schism and consciousness.

The Role of Anecdote in Science: A Roundtable Discussion

Panelists

Frank Durham (organizer)
Tulane University

Marcella Greening
University of Southern California

Thomas J. High
Family Practice Physician

Kathryn Montgomery Hunter
Northwestern University

Linda Layne
Rensselaer Polytechnic Institute

This open panel, which will be performed without formal presentations, developed from interactions at last year's SLS meeting in New Orleans. There Tom High, a family practice physician from Atlanta, followed his interests by attending sessions and panels that focused on medical matters. As a practitioner he had recognized at previous meetings a divergence between medicine as reported by ethnographically-minded SLS presenters and medicine-as-science of the sort he depends on—controlled studies, good statistics, and the like. This dissonance, which is not simply anecdote contending with generalization, was pursued informally at New Orleans. The present panel was assembled as a consequence; one element in the discussion will be this history of tension and collaboration.

Kathryn Montgomery Hunter will argue that anecdote and narrative are central to medical education and academic medicine (*Doctors' Stories* 1991). Tom High, living farther from academic medicine, will report from the contested interface where persons are translated into patients.

Linda Layne will bring to the panel a personal experience of neonatal crisis ("'How's the Baby Doing?'") illuminated by her anthropological insights into discursive practice. Marcella Greening's ethnographic subject is her own athlete's body, experienced from her perspective in feminist science. Their stories, like all good literature, teach while resisting reduction.

The questions encountered in this arena cannot be confined to medicine and literature it seems, but implicate science, and literature, generally. For Frank Durham this is dramatized by his recognition of elements of anecdote—irreducibly geographical and personal—even within the *mathematical* origins stories of science from the seventeenth century forward.

This forum, which begins from an SLS anecdote, leads us back to issues that are current within SLS. These issues include feminist and other transgressive approaches to science; the role of scientists within SLS; the relation between the outcomes that are literature and the outcomes that are science--and where medicine fits between them. Bring your insights and concerns, and your stories, and join us for an early Sunday exchange.

Tanya Augsburg Emory University & Georgia Tech

Resisting Diagnosis:
Staging the Female Medical Subject
In Contemporary Women's Performance

Numerous scholarly studies have documented how modern medicine has betrayed women. In my paper I examine how women who present themselves in the public sphere are currently 1) constructing themselves as medical subjects and 2) executing salient critiques of medical authority by means of performance. My discussion will focus on two examples: silicone breast implant recipients and the French multi-media artist Orlan whose most recent performances have entailed her undergoing multiple plastic surgeries. Both examples raise questions concerning the limits of complicity: what are possible means of resisting the medical colonization of women's bodies in a culture as obsessed with ideal representations of women as ours? Both examples also raise questions of information control: how can women enter the public sphere and relate their personal experiences without being inadvertedly diagnosed by their critics as suffering from mental or emotional disorders? Breast implant recipients have primarily relied on personal testimony in their struggle to be recognized as victims of medical neglect and manufacturer's greed. Orlan continues her grotesque critique of cosmetic surgery outside the operating room through gallery installations and public symposiums during which she subjects herself to constant ridicule in order to explain her work. I argue that both examples foreground abjection as a strategy of resistance. Accordingly, I will discuss the significance of abjection for the medical subject in general and the female medical subject in particular. I will conclude by contrasting the aforementioned examples with Cindy Jackson, the woman who has had over twenty surgeries to look like Barbie. In her quest to embody the normative ideals of beauty, Jackson's position *vis-a-vis* medical authority is quite complex. Refusing abjection, she has undertaken the public, seemingly complicit roles of plastic surgery consultant and frequent talk show guest. Her testimonies and performances on talk shows nonetheless raises questions about the limits of her complicity.

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"AND SHE HAD MADE HERSELF!": (RE)GENERATION OF "WOMAN" IN ACKER, WELDON, AND CARTER

Almost three decades before Simone de Beauvoir would write that "a woman is not born but made," Virginia Woolf performed a linguistic creation of "woman" in her 1928 novel *Orlando* There, at a climactic moment in this whimsical yet serious text, the protagonist who has been a man for his first thirty years is miraculously transformed in his sleep, and "he was a woman" (137). This metamorphosis allows Woolf to play with socio-historical assumptions about sex and sexuality, as she "bends" gender and reaches for a vision of multiplicity in difference. In a later and more radical attempt to move beyond gender—and toward a new concept of "woman"—Kathy Acker performs a similar textual operation on a female protagonist in her *Don Quixote* (1986), following the opposite trajectory from female to a new "hole-ly knight" who is "partly male" (29). In following the subsequent exploits of this character, Acker incorporates the experience of liminality, bringing the heretofore marginal, even abject, to centerstage and raising issues embodied in "woman": of motherhood, of abortion, of health and illness, and of identity.

This paper will use Woolf's and Acker's texts as a backdrop for a discussion of two other contemporary fictions about "making" "woman": Angela Carter's *The Passion of New Eve* (1977) and Fay Weldon's *The Cloning of Joanna May* (1989). In both we witness "surgical" procedures that move from the figurative generation of bodies (as seen in Woolf and Acker) to a more literal (re)production of "women," in one case from a castrated male, in the other from the single ovum of a female character. Though in the latter case the four resulting "clones" may be technically a male doctor's creation, in both instances the (re)generation is in fact guided, indeed controlled and determined by the mother. And in both operations we witness an erasure of the father and a return to Mother(s), though with a rejection of the maternal role as defined and manipulated by traditionally male systems. Further, a concerted confusion of sexes leads to multiple projections of self and of desire, a destabilizing of any unitary identity, either masculine or feminine.

In both novels we encounter "the Mother in a complicated mix of mythology and technology" (Carter 46), and explore the boundaries between literature and science in the various methods of constructing the body of "woman." The paper will draw upon the work of theorists such as Judith Butler, Donna Haraway, and Luce Irigaray to discuss this (re)generation of women and its ramifications for female experiences such as rape, pregnancy, abortion, sterilisation, maternity, and mother-daughter relations.

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Human Eating Disorders: The Drama of Clinical and Literary Discourse

An ideological and linguistic struggle over bodies, for the most part female bodies, rages on under the banner of Eating Disorders. In a year when scientists claim to have identified an "obesity gene", Susan Bordo claims that the language used to describe eating disorders can be "deconstructed to reveal a more widespread *cultural* disorder." In discipline-based writing about eating disorders, the impetus is to articulate a general, fundamental paradigm for human eating and body imagery. The result, however, can be described, in the words of Charles Bazerman, as an intertextual drama in which an even deeper struggle is over sociobiology and the framework of knowledge.

The first foray will be into the intertextual drama over sociobiology. By looking at recent clinical symposia on eating disorders, as well as the writings of such theorists as Bordo and Maud Elman, I will look at the tactics of evaluation: how are eating disorders elucidated, in turn, by biomedical investigations and by cultural analysis? The tensions over framing knowledge about eating disorders, I will show, are artificially heightened by incomplete arguments, creating oppositions and dissociations. In view of recent successes in the management of at least one component of eating disorders, bulimia, by anti-depressants, one is left wondering whether this intertextual drama, and others like it, is slated to become passé.

Enter the world of dramatic fiction. In a reassessment of Margaret Atwood's *The Edible Woman*, along with the recent *Til the Fat Lady Sings* by Alisa Kwitney, I will look at how the textual drama of fiction can supersede the intertextual drama over sociobiology. The drama of these texts are ideologically vague and theoretically pluralistic. They point to indeterminate, shifting and ambiguous motives for changes in appetite. Indeed, however exaggerated, appetitie itself is but one factor in the complex behavior of the novels' characters. No rigid ideological perspective exists and, therefore, the drama emerges from the struggle of human agents rather than from philosophical perspectives.

The Rhetoric of Surgery: Narratives for Patient Well-Being

Linda Saladin
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This paper will examine the rhetorical effects of doctor-patient communication on the outcome of surgery performed on women. I take into account both the historical construction of medical communication as well as current practices. My assumption is that these interactions between doctor and patient constitute a narrative, though a refracted one, about the patient and her illness. A patient is both the protagonist in a story constructed with the surgeon and simultaneously a reader of her condition based on these interactions. According to Harold Brody, such "stories of sickness" (Brody) clearly affect a patient's psychological and physical well-being, yet language remains a virtually unexamined issue for physicians.

My task then is to show convincingly that increased attention to the rhetorical techniques which language specialists employ in literary texts may be applied to the conversations attending physical examinations, and that appropriate reflexiveness about language will aid the healing process much as the actual surgery will. I will do so with a preliminary discussion of the surgical "body" in history, followed by an overview of the surgeon's increasing position of power up to the present day. Finally, I will provide some examples of doctor/patient exchanges in order to suggest areas for increased rhetorical focus.

Mapping Migration:
Some thoughts on *Moby-Dick*, Matthew Fontaine Maury, and Bruno Latour

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In one of the innumerable points where Melville interrupts the narrative flow of his whale book, Ishmael notes: "So assured, indeed, is the fact concerning the periodicalness of the sperm whale's resorting to given waters, that many hunters believe that, could he be closely observed and studied throughout the world; were the logs for one voyage of the entire whale fleet carefully collated, then the migrations of the sperm whale would be found to correspond in invariability to those of the herring-shoals or the flights of swallows." This is followed by a footnote mentioning Matthew Fontaine Maury— "The Pathfinder of the Seas"—whose work on the movement of the oceans (including the migration of whales) was published at nearly the same time that Melville was writing his novel. Maury devised a system for the superimposition of standardized data that, in the language of Bruno Latour, produced an asymmetry: each ship had always already visited the latitude it cruised. His problem was to "*somehow* bringing home these events, places and people. How can this be achieved, since they are distant? By inventing means that (a) render them *mobile* so that they can be brought back; (b) keep them *stable* so that they can be moved back and forth without additional distortion, corruption or decay, and (c) are *combinable* so that whatever stuff they are made of, they can be cumulated, aggregated, or shuffled like a pack of cards. If this conditions are met, then a small provincial town, or an obscure laboratory, or a puny little company in a garage, that were at first as weak as any other place will become centres dominating at a distance many other places" (*Science in Action* 223). To accomplish this, Maury needed allies— standardized delegates who were faithful, true, and subservient. Some were human—ship captains, members of the National Meteorological Observatory, Cabinet members, and ambassadors—and others were nonhuman—water that expands when it freezes, Carnot cycles, mercury responding to barometric pressure, standardized time, relative salinity, and specific gravity. Both Melville and Maury, albeit in markedly different texts, depict the production of networks designed for prediction and control of both human and nonhuman phenomena. By examining Latour's notion of the superimposition of reports,s centre of calculation, and actor-network theory, this paper draws together two tangentially related 19th century texts—*Moby-Dick* and *Sailing Directions*— to show how they both participate in the production of a Latourian "effect of reality."

Bruno Latour and the Image of the Human

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In We Have Never Been Modern, Bruno Latour describes modernity as arising from the "Modern Constitution," which sought to carry out the explicit work of separating and purifying the categories of Nature and Society while furtively combining them through the implicit work of translation into hybrid quasi-objects and quasi-subjects. Latour thereby offers a means to elucidate contemporary paradoxes of human autonomy in which autonomy is compromised even as it is asserted (e.g., genetic engineering, addictions), in which an initial presupposition of the separation of the human from the natural gives way to the realization of their irrevocable intertwining (e.g., environmental crises).

Latour believes his argument to be liberating, offering emancipation from the incoherent tenets of modernity in favor of a salvific nonmodern strategy through which our culture may continue to do what it always has done, but now with self-knowledge. However, while there is much that is insightful in Latour's analysis, insofar as he advocates the continuing hegemony of the Modern/Nonmodern Constitution, he renders the human image epiphenomenal to it. "The expression 'anthropomorphic' considerably underestimates our humanity. We should be talking about morphism....A weaver of morphisms--isn't that enough of a definition? The closer the anthropos comes to this distribution, the more human it is" (p. 136). The human, initiator of the hybridizing process, becomes its product. Indeed, so compelling is the logic of Latour's inquiry that it leads him to conclude that whatever would interfere with the continued promulgation of the paradoxes of the modern is "immoral" (p. 140). The human as a non-historical category is repudiated altogether.

In this paper, I wish to explore how Latour's analysis, intended to empower and explain, becomes disempowering and compulsory. For lack of a tenable image of the human, and apparently of an understanding of what is at stake in the image of the human, Latour reproduces the double maneuver of modernity in which the human is simultaneously rendered as free and autonomous, and as enthralled to the most recent technological possibilities.

Bringing Pym Home: Structure in Poe's The Narrative of Arthur Gordon Pym

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In Poe's The Narrative of Arthur Gordon Pym, critics have discerned two different narrative strands: the "adventures" of Pym, or the narrative proper; and odd, technical descriptions of seamanship and the nesting habits of birds, among other phenomena. Critics have accounted for these different strands in a variety of ways. Some have used psychoanalysis, mythology, and/or linguistics to show a hidden unity between the strands. Others seem simply to ignore the differences. A third group sees the differences as signs of a fundamental disunity, which for most of this group marks Pym as not a literary text of great merit.

The work of Bruno Latour allows another perspective on both the text and the critical debate about it. Latour posits, in scientific discourse, two ways of looking at a scientific controversy. After the controversy has been resolved, the solution looks natural, "rational." At the time of the controversy, though, the both sides of the debate have equal claims to rationality, so one has to look at the social as well as scientific arguments the opponents can bring to bear (the human and their non-human allies). In this respect, Latour's work is reminiscent of both Michel Foucault's and Thomas S. Kuhn's revisions of the history of science. Latour has the advantage over Foucault in that Latour allows the physical, the material into the debate, whereas Foucault's "archaeology" seems to shunt the non-human off to the side in troubling ways. As for Kuhn, Latour has, perhaps, a more insightful analysis of the social aspects of scientific discourse.

Latour's ideas are useful for an analysis of Pym because they allow a discussion of the two kinds of narrative without necessarily insisting they be united. That is, the "narrative proper" might be described as Pym's trying to use every kind of "evidence" available to him to make sense of the shipwrecks, the cannibalism, and the strange new cultures he faces. When faced with more familiar circumstances, on the other hand, Pym can describe them "rationally" because he is looking back on controversies already settled, or at least he can join an established scientific dialogue. In this light, when Pym is not able to complete his narrative, to finally join the strands of narrative, the anonymous editor's note at the end of the text jumps in to "rationalize" Pym's journey, to make use of it. Finally, Pym's preface, with its conflation of Pym, Poe as a fictional editor, and Poe as the writer of Pym, leads to critics' attempts to rescue Poe's text, much in the same way the anonymous editor tries to save Pym's journey--the critics' need to bring back Pym and Poe, to make the text useful. While Latour's work is similarly useful in bringing Pym back, it also promotes a better understanding of the critical controversy surrounding the text.

THE EVOLUTIONARY SAGA OF HUMAN LIBERATION: BURIED NATURE/CULTURE DISCOURSES IN WILLIAM HAVILAND'S ANTHROPOLOGY 7TH EDITION

Brian Noble
University Of Alberta, Edmonton

An analysis of narrative structure, figurative, and design features of one of the most widely used introductory textbooks in North American anthropology teaching programs exposes master narrative tendencies toward holdover 19th century progressionist and liberationist views of nature and culture. Two great liberations are noted: 1) the human cultural/physical liberation from nature written into Haviland accounts of Australopithecine evolutionary emergence from out of the trees into the Savannahs; and 2) the contemporary millenialist liberation from runaway global culture through a return to "nature".

Throughout the book, Haviland deploys notions of "nature" as 'essence' or 'ordered reality' -- i.e. that which is apprehendable to scientistic (read 'naturological') practice and imagining, while marginalizing and superficializing humanistic (read 'culturological') practice and knowing. Happily, Latour's hybrid "natures-cultures" (1993) dissolve the power dichotomies, but leave anthropologists like me wondering (unhappily) why the binarist 'science over humanities', 'nature over culture' master narrative game continues in the discursive practices of introductory anthropology teaching and publishing.

IVAN KARAMAZOV'S VISION OF THE SCIENCE AS THE NECESSARY SOURCE OF MIRACLE AND MYSTERY FOR THE SUBJECTION OF MAN

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"They have science: but in science there is nothing but what is the object of sense. The spiritual world, the higher part of man's being is rejected altogether, dismissed with a sort of triumph, even with hatred. The world has proclaimed the reign of freedom, especially of late, but what do we see in this freedom of theirs? Nothing but slavery and self-destruction."

Fyodor Dostoyevsky examined the logic of the socialist of the 19th century and portrayed their ideologies in the characters of his novels as being suicidal in nature. The foremost characteristics of the socialist was his denial of tradition, family, conscience, and the church to actualize, using science as the means, the greatest good for the greatest number.

Dostoyevsky realized the socialist, and the capitalist, would use science as the means to provide the necessary miracle and mystery to appease the religious nature of man. However, in as much as science has "only to do with objects of sense" the nations which appeased the sensual desires of its people–"living by bread alone"–would collapse, having forsaken the necessary moral foundation of a nation established by God.

We have witnessed the end of the reign of Dostoyevsky's socialist with the collapse of the Soviet Union. Does the same fate lay in store for the nations who use science as the means to supplicate the material desires and passions of its people?

SCIENTIFIC WITNESS & MORAL VISIONARY: PRIMO LEVI & THE CULTURE OF THE NAZI HOLOCAUST

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Primo Levi was an Italian Jewish chemist captured as a partisan by the Germans and deported to Auschwitz in 1944 "after the German Government had decided, owing to the growing scarcity of labour, to lengthen the average life-span of the prisoners destined for elimination; . . . [the Nazis] conceded noticeable improvements in the camp routine and temporarily suspended killings at the whim of individuals". When he returned home he took up full time work as a chemist. Soon, however, he wrote: "The need to tell our story to 'the rest', to make 'the rest' participate in it, had taken on for us . . . the character of an immediate and violent impulse, to the point of competing with our elementary needs. The book [*Survival in Auschwitz*, 1958] has been written to satisfy this need: first and foremost, therefore, an an interior liberation."

In the 1960s Levi -- having become manager of a chemical plant -- turned to fiction writing. His most famous work from this time is *The Periodic Table*, a series of character studies, each with the title of a different chemical element, but each in a realistic -- though often comic -- vein. In some cases, he said, the characters did bear resemblance to persons living and dead that he had known. In some cases, Levi illuminates the horrors of the Nazi Holocaust and Nazi Science through seemingly plain, yet intense allegory.

Levi committed suicide in the late 1980s, as a result of unimaginable and unendurable mental-emotional pain from chronic, clinical depression. In the last decade of his life he composed his third and final book on the camps, *The Drowned and the Saved*, but he also produced a book of short stories entitled *The Sixth Day and Other Stories*. This book of comic, surrealist and tall tales deals with the origin, nature and future of human beings. We see these humans through the eyes of an accomplished scientist who has suffered and chronicled the greatest act of mass barbarism humans have ever committed on one another. The work is suffused, however, with a whimsical acceptance and affection for us curious beings: We struggle for understanding, a measure of control, and some beneficence within a cosmos that remains indifferent and opaque.

My thesis is: The striking kind and quality of all Levi's writings depend on the necessary ***combination*** of his talents as a trained scientist; a subtle, keen and morally profound thinker; and a literary craftsman of enormous skill.

POST-WORLD WAR II TECHNOSCIENCE

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ABSTRACT

In the course of his correspondence with Claude Eatherly, the pilot who gave the order to drop the atomic bomb on Hiroshima, Gunther Anders, a Viennese philosopher, sends his "Commandments in the Atomic Age" originally published in 1957. In it, Anders explains that after World War II humanity has to reconceive its convictions and behavior patterns, "for in the course of the technical age the classical relation between imagination and action has reversed itself."

Postmodern technoscience exemplifies Anders' concern with the relationship between imagination and action. If the traditional transcendence of the imagination over mere human action was the acceptable model, then it is an outdated model. The model of the technical age, as Anders calls it, requires that the imagination play catch-up to the actions of humans. Human imagination lags behind human action, and the call for the imagination to transcend action is a warning call that we need the imagination to save lives, to survive into the next century.

MAHATMA GANDHI
THE ARMAMENTARIUM OF NON-VIOLENCE

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For most of us the promise of peace in this world of ours is sensually appealing. Peace remains ever elusive, leaving us uneasy, as we witness an incredible array of acts of violence around us.

The central theme of this pictorial essay is the quintessence of Mohandas Karamchand Gandhi (1869-1948). Two generations have passed since the assassination of the Mahatma (Maha-Great;Atma-Soul). The world has changed since the day of Gandhi, and in many dimensions, because of Gandhi. Honing carefully the weapons of non-violence (*ahimsa), non-cooperation (satyagraha*) and civil disobedience (*hartal*), Gandhi appeared at the heart of global change, the end of colonialism and the British Empire, the beginning of new nations and new freedoms. And yet, this modern champion of peace came to his end in violence, bred in hate and anger against his ideology of human brotherhood.

This presentation seeks to portray the legacy of this man who came closest to bringing a global awareness of peace into focus in recent times. In any search for peace, the most tangible person is Gandhi. His principles continue in use in all efforts we encounter in present historicism.

Against the background of the Gandhian hagiology, this essay provides an examination of the phases of his life and his experiences, a retrospective analysis of his "karma", to define how he grew to influence the lives of millions all over the world, an evolutionist who stood for social reform against racial and religious discrimination, bigotry, injustice and indeed, many human differences that continue to emerge. The Gandhian appreciation of interpersonal violence is examined here, as well as the ubuiquity of "emotional" violence, which is so eloquently expressed in his spoken and written words. Careful comparisons are drawn between Gandhi, the freedom struggle led by Martin Luther King and others in the USA and more recently the success of Nelson Mandela in South Africa.

Selection will be made for content, from over 1,000 (35) MM SLIDES, collected and produced from a wide spectrum of archival, historical and contemporary materials.

keywords: non-violence
violence

Sunday, November 5, 10:15-11:45 AM

A. Poetry and Science **Sico A**
Steven Carter, chair

- Beth Browning: "'There is Neither Up nor Down to It': Anti-Organicism in the Poetry of Marianne Moore"
- William Crisman: "Humphry Davy and John Keats: Romantic Redefinitions of Matter and Mind"
- Cynthia Guidici: "'Hand in Hand with Science': The Frame of Tennyson's *The Princess*"
- Donna McBride: "Incantory Magic: Female Images of Alchemy and the Sacramental in the Poetry of Lucille Clifton and Jane Kenyon"

B. Language, Epistemology, and the Cognitive Sciences II **Pavilion**
F. Elizabeth Hart, chair

- Jefferson Faye: "The Birth and Growth of the Cognitive Novel: Joseph McElroy's *Plus*"
- Maria L. Assad: "Poetic Obscurity and Dynamical Discourse Theory: The Case of Mallarmé"
- Joseph Carroll: "An Evolutionary Theory of Literary Figuration"

C. Constructing and Deconstructing the Body **Canyon(HI)**
Philip Wilson, chair

- Jacqueline M. Foertsch: Illness as Metaphor ≠ Metaphor as Illness: A Critique of Susan Sontag's Influential Theory"
- Barbara A. Heifferon: "Deconstructing Colonial America's First Medical Compendium: A Surprising Heteroglossia"
- Jamil M. Mustafa: "Constructing Degeneration: *Dracula*, Henry Maudsley, and the Lunatic Asylum"

D. 17th Century Science **Sico B**
Laura Otis, chair

- Sylvia Bowerbank: "Science and the Self-Technologies of Early Modern Women"
- Tom Kealy: "The Poetics of Life: Natural History and Literary Traditions in the Seventeenth Century"
- Robert E. Stillman: "Metaphors, Monsters, and Natural Philosophy in Seventeenth Century England"
- Douglas L. Hollinger: "The New Enfeoffees: Staking Claims to Nature in Early Modern English Science"

E. "Worth A Thousand Words": Documentary Photography and the Problem of Proof Positive **Metro**
Stanley Orr, organizer and chair

- Stanley Orr: "Documentation and Detection in Antonioni's *Blow Up*"
- Beth Rayfield: "Documentation and Desire: Popular Anthropology and the Stereographic Representation of the Sexualized Racial Other"
- James Goodwin: "Documentation in Black and White: The American South and the Depression"

F. Hypertext **Westwood(HI)**
David Porush, chair

- Stephanie Strickland: "Science Themes and Figures in a Hypertext Poem: *True North*, or, Willard Gibbs Meets Emily Dickinson"
- Marjorie C. Luesebrink: "'Upward Beyond the Constant Flow There Was Moondling': Writers, Rhetoric, and Technology in the Electronic World"

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"There is Neither Up Nor Down To It": Anti-Organicism in the Poetry of Marianne Moore

Beth Browning, graduate student
Department of English, University of Chicago

Marianne Moore's 1918 poem "In the Days of Prismatic Color" features a centipede-like creature, "part of it...crawling, part of it/...about to crawl, the rest/...torpid in its lair." This centipede is doing three things at once; in this regard, it resembles the Eve character in Moore's 1923 poem "Marriage," who can "write simultaneously in three languages–English, German and French–and talk in the meantime." The source for Moore's multi-talented Eve is a *Scientific American* article that appeared in January 1923, titled "Doing Two Things at Once: Multiple Consciousness, or Reflex Action of Unaccustomed Range?" This article, which could be classed as popular neuro-psychology, documents the case of one Thea Alba, asking the following question: Is it possible that the conscious mind can address two or more concentrated and similar tasks at once? In other words, is the consciousness that controls our actions multiple and dispersed rather than centralized? Moore was asking a related question in "Marriage": is it possible for women to become part of a married unit and maintain autonomy? In other words, can the consciousness that controls this organism (the married couple) be multiple and dispersed rather than centralized, and should it be?

Questions of this type surface throughout Moore's oeuvre. Focusing on poems from the twenties, thirties, and forties such as "People's Surroundings," "Marriage," "Those Various Scalpels," "The Labors of Hercules" and "Four Quartz Crystal Clocks," I will explore in this paper the ways in which Moore both drew on and creatively reconfigured popular interpretations of neurology, psychology, and endocrinology to construct what we might now call a "cybernetic" alternative to the organismic model of individuals, aesthetic productions, and intimate relationships. This organismic model, which Donna J. Haraway argues prevailed in the biological sciences until midway through the twentieth century, posited the organism as the basic unit of analysis, and treated it as hierarchically organized, fully distinct from its surroundings, and unified by a centralized system of command-control. According to Haraway, the later-century cybernetic model pictures control as exercised by multiple, mutually regulatory systems functioning both within and across the organism's boundaries. I argue that Moore, who studied neurology and genetics in college and maintained a lively interest in popular science during the teens, twenties, and thirties, developed her *own* vision of a decentered command-control in dialogue with relatively young branches of biological research that imagined the human body complicated by multiple regulatory systems. Early twentieth-century research into the mechanics of reflex action raised the possibility, magnified by popularizers, that the nervous system, rather than being the uni-vocal mechanism of mental and physical control as previously imagined, contained multiple channels capable of simultaneous, unintegrated activity. Freud's theorization of the sub-conscious suggested the existence of a second mind, working in some instances at cross purposes with the traditionally recognized conscious mind. The nineteenth-century identification and theorization of endocrine, or "ductless", glands as a chemical regulatory system working in conjunction with the nervous system, gained widespread acceptance in the first decades of the twentieth century, further complicating visions of the human body as unified, centrally organized, and stable. Furthermore, the discovery that hormones controlled manifestations of secondary sexual characteristics and could be transplanted with some success from one body to another, one gender to another, even one species to another, challenged understood boundaries between organisms, genders, and species.

I argue that Moore elaborated and redeployed these science-generated challenges to unity and differentiation, evolving poetic forms and contents that worked to remove the organism from its position of priority well before the biological sciences would make that move.

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Humphry Davy and John Keats: Romantic Redefinitions of Matter and Mind

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Although the contemporaries Humphry Davy and John Keats knew neither one another nor one another's work, their writings reflect a pattern of mind that characterizes British Romantic thought, whether scientific or poetic.

A well-known predilection of both thinkers is a bias against metaphysical abstraction. In his second 1805 lecture on geology, Davy takes Plato to task for "throw[ing] new clouds of abstracted metaphysics over doctrines originally obscure.... He promises a reality, he presents a dream." Keats, too, is famously resistant to metaphysical system, and in one of the great letters to J.H. Reynolds complains about "running one's rig on the score of abstract[ion]." Both writers adopt a general stance of preferring "observation" or "sensation" to deductive hypothesis.

What connects these two thinkers in more than a hazy, accidental way is the response they make to their dislike of deduction. The anti-deductionist response does not produce an emphasis on brute empirical particulars but, paradoxically, on a secondary form of abstraction. In his departure from his earlier inspiration in chemistry, Lavoisier, Davy begins to privilege "structure" over matter. Especially in his essays out to distinguish the diamond from coal, Davy emphasizes the organization of material over the intrinsic nature of the ponderable material itself. In his early medical training, Keats too became accustomed to think of objects arranged along abstract grids. Indeed, the first extant line of his medical school notebook at Guy's Hospital is "Anatomy--Knowledge of Structure."

The paper studies the paradoxical relation of anti-abstraction and abstraction in these two writers. For Davy, the emphasis falls on the 1805 geology lectures and his on-going discussion of the diamond. For Keats, after a treatment of the medical school notebooks, discussion turns to non-deductive and anti-material "structure" as a compositional principle in "The Eve of St. Agnes" and "The Fall of Hyperion."

The paper concludes by suggesting that the anti-abstractionist abstraction of 1800-1830 is the necessary precursor to scientific ideas as they developed across the nineteenth century.

"Hand in Hand with Science": The Frame of Tennyson's *The Princess*

Cynthia Guidici
University of North Texas

Given the historical reception of Alfred, Lord Tennyson's *The Princess: A Medley* since its publication, readers recognize two problems: first, the poem contains enough evidence to support either a pro- or anti-feminist reading, making it difficult to pin Tennyson down and thus to interpret the poem with any sense of satisfaction. Second, no critic has yet taken into full consideration the occasion that dominates the frame as a key to interpreting Ida's story. Certainly, several critics use the frame to understand the story: C. Glen Wickens, for example, argues that the prologue establishes an important theme of the poem, "the evolutionary destiny of the human race and the cultural role that science should play in defining that destiny"; Tennyson then attempts in the body of the poem to synthesize this understanding of evolution and his religious faith, a task he will not complete to his satisfaction until he finishes *In Memoriam* (371). The frame bears still closer examination, though: Tennyson wrote to his editor that "It may be remarked that there is scarcely anything in the story which is not prophetically glanced at in the Prologue" (Ricks 187). In fact, striking parallels between the historical founding and goals of the Mechanics' Institutes not only glance at but "prophesy" the hopes, successes, and final failure of Ida's remarkable university.

Tennyson began work on The Princess in the late 1830s and wrote intensively from 1847 until late in 1853; he revised the framing prologue and epilogue extensively and did not complete them until the fifth edition of the poem in 1853, "indicat[ing] . . . [his] determination to create a frame which precisely express[ed] his purpose," according to Isolde Karen Herbert (145). Herbert argues convincingly that the frame functions as an "enclosure" that serves to "express, yet control, revolutionary social ideas" (145-6), ideas such as educating women on the university level—or offering working-class males an opportunity to study science and engineering. Both questions troubled Tennyson's England, since the social implications of both projects threatened the power structures of Victorian England, in the workplace, in the home, in the university lecture hall, and even in Parliament. Tennyson took the problems of who should receive education, at what level, of what kind, and to what end, more seriously than his "burlesque" might lead readers to believe; his use of the historical struggles of working-class men to attain scientific education would be out of place in a burlesque; rather, he uses the frame to legitimize Ida's goals.

My paper examines in detail, using the words of George Birkbeck and those who worked with him to found the Mechanics' Institutes, the intentions of the founders and their hopes for the men whom they would teach. It reports, again using primary sources, the direct opposition of the Anglican church, the intellectual community, and influential policy-makers to Birkbeck's project. It gives the historical response of the founders to their critics and chronicles the problems that finally crippled the Institutes. At each point in this discussion, I draw attention to the parallels in *The Princess*: to Ida's desire for her female students that knowledge, especially scientific knowledge, be no longer "a fountain sealed" (II.76); to her defense against the criticisms expressed through Gama, the Prince's father, Cyril, and the tellers of the poem, criticisms that match closely those of Birkbeck's opponents; and to the forces which cause Ida's university to collapse. The paper concludes with a re-examination of Tennyson's poetic opinions on women's right to higher education in the light of his understanding of the problematic Mechanics' Institutes.

Works Cited

Herbert, Karen Isolde. "'A Strange Diagonal': Ideology and Enclosure in the Framing Sections of *The Princess* and *The Earthly Paradise*." *Victorian Poetry* 29.2 (1991): 145-59.
Ricks, Christopher. *Tennyson*. New York: Collier, 1972.
Tennyson, Alfred. *The Princess: A Medley. The Poems of Tennyson*. Vol. 2. Ed. Christopher Ricks. 2nd ed. London: Longman, 1987.
Wickens, C. Glen. "The Two Sides of Early Victorian Science and the Unity of 'The Princess.'" *Victorian Studies* Spring (1980): 369-88.

Incantatory Magic: Female Images of Alchemy and the Sacramental in the Poetry of Lucille Clifton and Jane Kenyon

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Poets have long claimed their unique powers of language enable them to experience and convey gnosis--special knowledge. In making this claim, they are declaring themselves as members of the poetic tradition in Hermetic philosophy. Intimately associated with this tradition is the metaphorical and transformative power of alchemy. For centuries, despite the active participation of women in alchemical experiments, this was a field reserved for men--the magi--who were most suited to handle the power of the highest magics.

In this paper, I will argue that contemporary poets Lucille Clifton and Jane Kenyon reclaim this tradition of alchemy and the power of incantatory magic for specifically womanist activities as a way to reveal the sacramental experience in daily life. Intimacy in subject matter and the use of ritual language in the poetry are used to involve the reader in a cycle of ritual-enactment-renewal/transformation. This cycle is ritually embodied first in poetic form and then physically embodied in the doing of women's work, thus conferring grace and power on those tasks which society has traditionally denigrated.

The Birth and Growth of the Cognitive Novel: Joseph McElroy's Plus

Jefferson Faye
University of Cincinnati

Alicia Miller, in her essay "Power and Perception in Plus" (Review of Contemporary Fiction, Spring 1990, pp. 173-80), explains that Joseph McElroy's novel about a disembodied brain's life in a space capsule "asks much of the reader of Plus, and like Imp Plus (the brain itself), who watches himself increase as his capacity for language increases, so the reader seems to expand as his or her capacity for understanding the text expands" (179). Miller's description is more accurate than she realizes. When she discusses McElroy's "centeredness in his relentless determination to explore new angles of vision, new meaning and language that communicates confidence" (179), she does not see the influence he has had on other novelists.

In the nearly twenty years since the publication of Plus, novelists as influential as Don DeLillo, Kurt Vonnegut, Tom Robbins, Richard Powers and William Gibson (to name but a few) have published novels that follow his lead in exploring the nature of the brain and intelligence. McElroy accomplishes his goals most exhaustively, allowing a brain to narrate its own development. That his narration matures (and becomes more accessible) as the brain becomes more self-aware is not only important to his reader, it is a reflection of the nature of cognitive science.

In the same twenty years since the novel's publication, there has been an explosion in cognitive science, so much so that brain science has appeared in the New York Times (often as frequently as once a month on the science page), in mass-market paperbacks, on cable and public television, and even in a coffee table-style art book by David MacCauley. The result is that Plus, despite hardly having a significant direct influence on contemporary culture, remains a significant primary source in predicting the popularization and readability of brain science.

The process he describes in the novel has been followed in the world of science and the public sphere, beginning with isolation, the development of a crude linguistic model for describing processes and structures as they are understood, and the increasingly fluid communication of that knowledge with less informed audiences. There is also a parallel in the means by which McElroy is describing the process of gaining any sort of knowledge, especially the knowledge of the brain. Imp Plus' descriptions become more complete as he develops the language necessary to describe the processes he observes in himself, and his increasing expertise continuously opens new avenues for discovery. In this, Imp Plus' narration is not only self-defining, its implications are definitive as he attempts to explain the human process of self-discovery from a biological perspective.

Plus is an important novel because it succeeds where naturalistic novels failed: McElroy is able to identify the biological processes which enable humanity to ask the questions about what it means to be human; his narrative is an empirical description of the process of discovering an ability to self-examine, and to use that self-awareness to expand all notions of what it means to be human, and, finally, to grow beyond those limitations.

Poetic Obscurity and Dynamical Discourse Theory: The Case of Mallarmé

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When the young Marcel Proust published a scathing literary critique against what was perceived as the symbolists' penchant for deliberately fostering obscurity in their writings ("Contre l'obscurité," La Revue blanche, July 15, 1896), Stéphane Mallarmé responded with a remarkable article, "Le Mystère dans les Lettres" (1896). In it, the undisputed leader of the Symbolist school goes far beyond a simple rebuttal to specific accusations of poetic virtuosity for obscurity's sake. Instead, like in many of his other prose writings, Mallarmé argues for an innate enigma at the heart of poetics that must be understood and accepted as an ineffable mystery, if literary creativity is to survive. Post-structuralist readings have done much to validate the enigma and give it a theoretical framework. In the process, Mallarmé became one of the leading paradigms for deconstructive discourse.

I shall argue that dynamical discourse theory, based on scientific concepts of nonlinear dynamical systems theory, offers new insights into Mallarmé's poetics by expanding on recent critical writings and recuperating for Mallarmean discourse what deconstructive strategy neglected, namely, the notion of time as an operator. Basic concepts of dynamical complexity will be applied to show that the poet's insistence on creative intelligence is based on a vision of global determination and not on locally defined "names," affirmations and explications, terms by which so many of his critics and even his admirers understood the "poetic principle." Mallarmé describes poetic creativity with a vocabulary that adheres to late 19th-Century literary nomenclature, yet as a whole reveal a vision that posits Literature's "exceptional" existence as a dynamical process. Furthermore, he insists that the outcome of a truly poetic expression is always "a miracle of infinity" that transforms a well defined set of data, the letters and words of language, into "supernatural terms" or "a mystery." I shall show that the Mallarmean verse, described in these terms, resembles a discursive strange attractor which globally defines the dissipative characteristics of symbolic language in general.

I analyze key passages of the poet's prose writings in the light of basic characteristics of dynamical discourse theory, the objective being a transposition of Mallarmé's symbolist expression into postmodern scientific terms, among them the strange attractor and fractal self-similarity. A secondary objective is to trace a notion of metaphoricity through dynamical discourse theory. I conclude that the Mallarmean poetic principle is, in fact, a dynamical one which harbors a new notion of time. My reading of this principle elucidates the relationship of the Word ("le Verbe") and Time to which the poet alludes in often cryptic terms. If "dynamics is the study of the movement of signification through time" (T. Weissert), then Mallarmé's poetic principle is an eminently postmodern principle projecting current thinking on dynamical complexity. It thus may help revive a mode of thinking centered around the beauty of metaphors.

An Evolutionary Theory of Literary Figuration

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I put forward two hypotheses on literature, one about cause and the other about function. The causal hypothesis is that the structure of meaning in all literary texts is the direct product of the author's mind, which is itself produced by the interaction of innate characteristics and environmental influences, including cultural influences. The second hypothesis is that literary texts are particular forms of cognitive maps; that is, like other forms of cognitive activity, their primary function is to locate the organism within its environment. Literary works depict the experience of people and also reveal the author's own sense of that experience. Both for the represented content and for the author's sense of this content, literary representations recreate the total structure of experience as an integrated emotional, sensory, and conceptual field.

The represented content of literature consists primarily of the basic biological elements of human experience: characters, settings, and plots, or organisms, environments, and actions. The represented actions in literary texts delineate the structure of motivations--desires and fears--among the people who are represented. Such structures of motivation are modulated by specific cultural contexts, but all cultural contexts are themselves shaped by the elementary, species-typical characteristics of human beings--what we call "human nature." Culture serves to regulate human behaviors that are rooted in evolved biological characteristics. Literary representations enable us to get a subjective feel for the relationship between elemental human characteristics, the way these characteristics are arranged within a given cultural order, and the identities of individual human beings within that order.

I argue that representations of characters, settings, or actions constitute a single, continuous scale with realism at one end of the scale and symbolism at the other. Figurations at the realist end of the scale represent people, objects, and actions as they appear to common observation. Figurations at the symbolic end of the scale use characters, settings, and actions to represent or embody the elemental forces and structural relations within the author's own world-picture or cognitive order. Typically symbolic forms of rerpesentation include fairy tales, myths, and allegories, but all literary representations have components of both realism and symbolism. The difference between realistic and symbolic forms of representation can be correlated with and, I think, derived from the psychophysiological polarity of extraversion and introversion.

I delineate a system of categories for the analysis of conceptual or thematic structure in all literary figurations. These categories are intended to constitute a mimimal set of the conceptual components that enter into any given world view. I arrange them here in descending order of inclusiveness: the cosmos, life, the specifically human, society, the family, the heterosexual couple, and the individual. All cognitive maps are lodged within individual minds, but this set of categories can be used to analyze both individual texts and the conceptual structures that characterize whole cultural orders. To illustrate the use of the categories, I compare the thematic structure of three world views: Christianity, scientific materialism, and postmodernism.

ILLNESS AS METAPHOR ≠ METAPHOR AS ILLNESS: A CRITIQUE OF SUSAN SONTAG'S INFLUENTIAL THEORY

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Since the publication of Susan Sontag's widely read and eminently readable *Illness as Metaphor* (1978), a wave of likeminded theories — that it is harmful (i.e., "sickening") to patients with terminal illnesses and to society as a whole to overdramatize the ontology of such illnesses with metaphoric terminology — has followed. Patients, Sontag and others argue, construed as "victims," are simultaneously romanticized and pathologized; a "war" on AIDS quickly deteriorates into a war on people with AIDS. Even though Sontag acknowledges early in her follow-up study *AIDS and its Metaphors* (1989) that "of course one cannot think without metaphors," she ultimately reinforces the work done in her earlier text with regard to, and on behalf of, people with cancer and in earlier decades TB with a new focus on the AIDS-related complex of diseases and those most affected by it. Thus illness as metaphor as Sontag describes it is also the story of metaphor as illness — a weakness or pathology in the social consciousness which, in the harm it does others, i.e., in the (ultimately fictitious) line it draws between a healthy "us" and a lost "them," will shortly undo us all.

Granting Sontag's argument the measure of validity it deserves, I would like then to challenge its desirability from a sociopolitical perspective and its very feasibility from a theoretical perspective. That is, while it is clearly wrong to mistake a virus or a cancerous growth for the unfortunate human host it happens to have settled in, is there not also a social inclination, a social responsibility to "dramatize" (i.e., "fictionalize") a threatening illness in a way that makes it finally real to those who refuse to see it? A high school student in an inner city neighborhood, or especially an all-white suburb, may have little interest in reverse transcriptase, the structure of T-cells, and sexual prophylaxis when he or she cannot "see" the threat that HIV represents more and more each year. Yet a virus described as a "bomb" or a "spy" moving through a body invisibly, "attacking" cells, "destroying" an immune system — these images are terrifying and moving, maybe even life-saving. And it is not just adolescents who respond to such imagery; all of us understand a biological process and our relationship to it when it is couched in layman's terms and narrated as a story to us.

Likewise we must ask, prior to whether it is good (socially "healthy") or evil (socially "sickening") to use metaphor to describe illness, whether we are able to make such a decision in the first place. Sontag posits that theree are some metaphors out there which "we might well abstain from or try to retire," thus depicting a realm of language — the healthy realm — which is removed, at least removable, from the condition of the metaphoric. But does such a metonymic haven for "plain talk," for the blissful unification of signifier and signified, exist? Drawing from poststructural theories, specifically those emerging from Derrida's "White Mythology" (1982) and *Of Grammatology* (1976) and from Geoffrey Harpham's *On the Grotesque* (1982), I will examine the opposite argument — that the metaphoric, whether regarded as a condition of illness (according to Harpham) or as our baseline condition of stabllity, towards which all language and language-making tends (according to Derrida), metaphor is undeniably, congenitally part of our linguistic structure, rendering Sontag's socially thoughtful injunctions ultimately impossible.

DECONSTRUCTING COLONIAL AMERICA'S FIRST MEDICAL COMPENDIUM: A SURPRISING HETEROGLOSSIA

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University of Arizona

Cotton Mather's Angel of Bethesda, written in 1721, is a richly revelatory text of both Colonial American thinking and western medicine. I argue that a deconstructive reading reveals surprising heteroglossia (based on Bakhtin's definition) in an era we tend today to think of as monologic as well as monolithic. Mather wrote this text toward the end of his life after his medically successful smallpox inoculation project in Boston. Unfortunately, the Colonial paradigm was not ready for such a project, and colonists firebombed Mather's home and rejected many of his teachings. He wrote Angel of Bethesda in this context, hoping to persuade others to support the findings of The Royal Society (microscopy was just gaining acceptance) in addition to the vaccination technique which he had learned from his West African slave, Onesimus. Thus he had both racism as well as anti-science prejudice to counter rhetorically.

A close reading of the text reveals many voices. This is the first documented text of slave dialect in the Colonies; in Angel of Bethesda we hear the voice of Onesimus. Mather also incorporates Royal Society writings (the Harvard library received all the writings from England) with his own Puritanical religious exhortations. The interplay of voices within the text provides a fascinating study and breaks through the monolithic view we tend to foster of this period.

Because of Mather's thoroughness, we also receive an extensive documentation of how western medicine was practiced at this time in the Colonies. Of course it is basically a medieval, humoral medicine. The surprising addition to the practice of European medicine is a Native American cure for malaria, the most effective of many of the *pharmakos* recommended during this time. So again we see the inclusion of another voice from the margins.

In my presentation, I use visual examples of Mather's text, to show the heteroglossic nature of the discourse. I also contextualize this work within larger contexts, the power blocs within Colonial America as well as the early phases of the emergence of medical science in Europe and Colonial America. My theoretical support comes from Michel Foucault, Bakhtin, Derrida, and Thomas Kuhn. Using their theories to deconstruct Mather's fascinating text reveals the voices within, under and on the margins of his powerful sermonic admonitions.

Constructing Degeneration:
Dracula, Henry Maudsley, and the Lunatic Asylum

Jamil M. Mustafa, the University of Chicago

I consider Bram Stoker's *Dracula* (1897), Henry Maudsley's *Body and Will* (1884) and *Natural Causes and Supernatural Seemings* (1897), together with various contemporary studies of the forms and functions of the lunatic asylum. I argue that these texts all participate in a defense against the threat of degeneration, and that the weapon of choice in this defense is structure--psychological structure, narrative structure, institutional structure. Obsessed with setting and maintaining neuropsychological, inscriptive, and architectural boundaries, these texts deploy structure to classify and to contain--and thereby to vitiate--the parasitic powers of degeneration.

During the *fin de siècle*, degeneration seemed to menace the integrity--that is, the *boundaries*--of the body in all its various forms: organic, social, cultural, political. Degeneration discourse responded to this all-encompassing, ever-shifting threat by delimiting--both in the sense of "defining" and that of "circumscribing"--the fleshly body as the battleground upon which the forces of evolution and retrogression could wage war. Unlike the social body, the human body offers Maudsley an enclosed space, a tangible, limited area in which he may contain both the "fiction" and the "fact" of degeneration--both the abstract concept and the actual threat. In *Body and Will,* Maudsley portrays the subjective region of degeneration as an area of signs which may be interpreted, classified, subsumed and checked by the objective sphere as represented by the human body and the body of psychiatric discourse.

To understand how narrative structure in *Dracula* militates against degeneration, we must read the novel on three ascending levels: hypodiegetic (by analyzing narrative structure as a trope or a process within the characters' stories); diegetic (by considering their individual accounts as discrete narrative structures); and extradiegetic (by approaching the entire novel as a single narrative structure). On all three levels, narrative works to characterize, to classify, and to contain the menace posed by Dracula-as-degeneration. The written word freezes and reifies--quite literally, character-izes--a mutable, abstract peril, thereby enabling readers and writers alike (both within and without the novel) to cope with the danger confronting them.

Works dealing with the construction, organization, and management of lunatic asylums disclose how institutional structure serves to defend against degeneration by figuratively conflating subject (inmate) and object (asylum, casebook). The role of the institution is to assign degenerate elements into the classificatory structure of the asylum, and thereby to contain them within the custodial structure of the institution-as-body. In institutional as well as in psychological and literary texts dealing with degeneration, the privileged means of classification and containment is narrative structure. Thus degeneration discourse objectifies the victims and representatives of degeneration by transforming them into pathological, classifiable, wholly legible *texts* which the proper authorities may file in the proper categories.

Metaphors, Monsters, and Natural Philosophy in Seventeenth-Century England

Robert E. Stillman, University of Tennessee

My special, historical interest is in the monster as a figure of speech and in figures of speech as monsters. Monsters are legion within the discourses of seventeenth-century England. Popular as metaphors for the disgorgings of the printing press, they appear as favorite figures of abuse in political and religious controversies; they are familiar tropes in contemporary debates about language, especially in reference to the monstrousness of metaphor; and they constitute a crucial category of research among the age's experimental philosophers. As cultural metaphors and "observed" facts of nature, monsters form an important nexus of ideas in seventeenth-century society about politics, language, and the new philosophy.

From Bacon to Sprat to Wilkins, natural philosophers align themselves, at rhetorically and politically important moments, with that larger network of monster-tamers who are concerned to control monstrous mobs in the state or monstrous metaphors in discourse. This is an alliance with a difference, however; for the ideological contribution of natural philosophers to the discourse of monsters in the seventeenth century is to take the monster out of the domain of the marvellous and the metaphorical and to "naturalize" it as an object of philosophical study. By means of a new specialized vocabulary and new technologies of investigation, it becomes possible to locate monstrosity as a reality of nature, as somehow "inside" the objects studied. The figural monster becomes the literal monster, and in the process (marvellously) new force is provided to the monstrous as a polemical weapon. As More, Hall, and Butler villify metaphorical monsters and monstrous metaphors, their attacks acquire "scientific" solidity from a natural philosophy discovering monsters as facts of nature. "Real" monsters in nature, whose errancies are subject to philosophical analysis, give new credence and new urgency to identifying "monsters" in culture.

An interest in monsters persists throughout the century. It begins in Bacon's Advancement of Learning, and it continues into Sprat's History of the Royal Society. That history calls upon "the most judicious Experimenter[s] to examine, and record the most unusual and monstrous forces, and motions of matter," and the Society's Philosophical Transactions documents the wide success of its call. That success is both curious and revealing--curious, because a fascination with monsters seems now merely a peculiar quirk of scholarship; revealing, because the monster constitutes a potentially crucial, not just a possible category of research among the natural philosophers. The monster becomes for the first time a category of research for the natural philosopher in Bacon's three-part division of the History of Nature. The Advancement details a research program "of nature in course, of nature erring or varying, and of nature altered or wrought; that is, history of Creatures, history of Marvels, and history of Arts" (3.330). "Nature erring" occupies a central place in Bacon's plan for the study of natural history. In the category of natural errors, the Advancement includes not just monsters but all "works of nature which have a digression and deflexion from the ordinary course of generations, productions, and motions" (3.330). Bacon's discussion points to a mingled fascination with and distrust of monsters and metaphors.

Douglas L. Hollinger
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Texas Christian University
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April 1995
Abstract for 1995 SLS

The New Enfeoffees: Staking Claims to Nature In Early Modern English Science

In the rhetoric of the early Royal Society of London--as revealed in the pages of its journal, *Philosophical Transactions*--Nature presented itself in two related yet divergent ways: as real estate held in title by God as Creator-Landowner and as *terra nullius*, a "blank" space not yet claimed by any legitimate earthly authority. Both attitudes adopted by late seventeenth-century natural philosophers exhibit the marks of gentle culture, with its emphasis on landed interests and heroic action. Rallying under the aegis of Baconian empiricism and setting themselves against inherited epistemological traditions, Fellows of the Royal Society alternately set out to purchase the earth from its original enfeoffer (figuring themselves collectively as enfeoffee) and to stake claims over epistemological territories not yet discovered by rival ways of knowing (figuring themselves as explorer-adventurers). The Royal Society began accomplishing both goals by recruiting merchants, "sea-men," merchant company factors, colonial governors and functionaries, and others to "till" (or spy on) foreign locales for specimens and observations which might ultimately perfect "the Grand Design of improving Natural knowledge" (*Philosophical Transactions*, no. 1 (6 Mar. 1664/5), p. 2). The Society attempted to retain authority over the new possessions of natural philosophy, however, as locus of authority for late seventeenth-century science in England and beyond.

Documentation and Detection in Antonioni's *Blow-Up*

Stanley Orr
Dept. of English, UCLA

> *An image becomes falsehood and illusion as soon as a person tries to see truth in it.*
> Jacques Ellul, *Humiliation of the Word*

Ellul's comment would provide not only an appropriate afterword for Ms. Rayfield's critique of documentary photography, but also an apt introduction to Michelangelo Antonioni's 1966 film *Blow-Up,* a text which directly questions the efficacy of photographic realism. Adapted from Julio Cortazar's short story of the same name, the film concerns Thomas, a young British fashion photographer who dabbles in documentary photographs of London's poor. In the course of his ramblings, Thomas takes a picture which, he believes, accidentally records a murder. The lines between representation and reality, art and documentation, observer and observed begin to blur as Thomas produces and studies a series of enlargements, "blow-ups," of the image in question.

The paper I have in mind will consider *Blow-Up* in light of its most immediate adjacent contexts – Italian Neo-realism, detective fiction, and film noir -- each of which, in turn, is informed centrally by the precepts of realism. Although Antonioni served his apprenticeship under post-war Italian filmmakers such as Roberto Rosselini and Vittorio de Sica, his *Blow-Up* lays bare the constructive machinery by which both Italian Neo-realism, and, to some extent, the *film noir* purport an "innocent" reflection of the heroic existential struggle of the rational human subject against an irrational world.[1] As an example of post-modern "anti-detective"fiction, on the other hand, *Blow-Up* questions the basis for the project of scientific positivism. Throughout the 19th and 20th centuries, characters such as Edgar Allen Poe's Auguste Dupin, A. Conan Doyle's Sherlock Holmes, and R. Austin Freeman's Dr.Thorndyke coalesced into the archetype of the scientific detective, a figure which itself became an embodiment for the rationalintellect triumphant. As he probes the photographic prints for evidence of a murder, at one point even with the metonymical magnifying glass, Thomas assumes the role of the scientific detective. But unlike its classical pretexts, *Blow-Up* refuses closure, unsettling the vital opposition between detective and mystery, subject and object.

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[1] A particularly appropriate example of the latter may be found in Henry Hathaway's *Call Northside 777* (1948), a film which pits the "indomitable human spirit" against faceless bureaucratic institutions, and one whose resolution hinges upon the enlargement of a newspaper photograph.

Documentation and Desire: Popular Anthropology and the Stereographic Representation of the Sexualized Racial Other

Beth Rayfield
Scripps College

> *There is no such thing as documentary--whether the term designates a category of material, a genre, an approach, or a set of techniques. This assertion--as old and as fundamental as the antagonism between names and reality--needs incessantly to be restated despite the very visible existence of a documentary tradition.*
>
> Trinh T. Minh-ha [1]

This statement, quoted from the work of feminist "third-world" theorist/filmaker Trinh T. Minh-ha, is an aggressive denial of a photographic practice, that, as she suggests, appears to be "very visible." Trinh emphatically denies the possibility of a category of cultural exploration that can be produced outside of culture. In other words, she suggests that there can be no cultural critiques that are objective, non-coercive or factual, because there is no space outside of culture from which to produce them. Every form of representation is just that, a "re-presenting" of visual information that is necessarily informed by the personal and/or cultural agenda of the producer.

This assertion has special resonance for the documentary photograph. The source of the photographic image is technological and chemical, and has long been viewed in western culture as a manner of representation that is inherently "truthful." Contemporary theorists of photography and visual culture, such as Trinh T. Minh-ha, Martha Rosler, and Abigail Solomon-Godeau, have effectively disrupted the notion of the photograph as "document," and have challenged its role is western systems of knowledge. However, the photograph continues to enjoy a special immunity and status, for example, it is allowed as evidence by the state and federal judicial system, and is used on official state and government identification.

In this paper, I shall examine the construction of the documentary image as it occurs in popular anthropology, specifically stereographs taken in Mexico, c.1900.[2] Through these images, I will illustrate the highly constructed nature of "documentary" photographs of this kind, and will suggest that the various aspects of this construction are evident in the numerous fine art motifs from the western art historical tradition that appear in these stereographs. I will examine the manner in which these motifs contribute to the construction of the Mexican woman as an object of sexual desirability and availability, and how they assist in the western consumer's perception of the racial other as erotic and exotic. Further, I will suggest that this method of erotic construction helped to yield a subject for the popular anthropological photograph, that was titillating to western consumers, while it helped to reinforce the cultural, moral, and racial hegemony of the colonizing nations of the west.

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[1] Trinh T.Minh-ha, "The Totalizing Quest of Meaning," *When The Moon Waxes Red* (New York: Routledge, 1991), 29.

[2] These stereographs are from the Keystone Mast Collection, which is housed at the California Museum of Photography, University of California, Riverside.

James Goodwin
Dept. of English, UCLA

Title: DOCUMENTATION IN BLACK AND WHITE: THE AMERICAN SOUTH AND THE DEPRESSION

Over the last decade, scholars in American studies have demonstrated the importance of photography to a more general understanding of our society and history. Alan Trachtenberg, the most influential of these scholars, has advanced the premise that "America names a discourse in which photographs. . .have participated, a discourse whose inner tensions and contradictions they help clarify, help us better identify and understand."

In the 1930s there are several prominent examples of the collaboration of photographer and writer in the social study of economic depression and ecological erosion in the American South and Midwest. Best known among these is the book by Walker Evans and James Agee Let Us Know Praise Famous Men. A study of three tenant families in Alabama, their work constitutes a critique of prevailing standards of photographic and social documentation, particularly those established by the Farm Security Administration through its regional field surveys. Let Us Now Praise Famous Men conducts an experiment that tests the boundaries of objectivity and of intersubjectivity in rendering the material culture and human experience encountered by a social investigator. The presuppositions and perceptual modes maintained by Evans and Agee are so dissimilar in kind that their collaboration constitutes a dialogue about representation and social mediation.

Within the book, the dialogue concerns the cultural issues of meaning and reality effect of "the work of art in the age of mechanical reproduction," to apply the relevant formulation made by Walter Benjamin in 1936. Evans has produced social images through a mechanical, practical medium. Standing at the front of Let Us Now Praise Famous Men without captions or other explanatory apparatus, the Evans photographs are mass rather than individual in their discursive contexts. Their procedures of representation entail citation, fragmentation, and contextualization in social relations. Agee's prose, on the other hand, is preoccupied with the provenance and spiritual place of common individuals and of their prosaic objects. His text is engaged in a quest for the aura and ritual value of the commonplace.

Within American culture of the 1930s, Let Us Now Praise Famous Men engages in a cultural debate with the methods and data of sociometric science, with he representation of Southern tenant farming in the popular press (notably in Time and Fortune), and with liberal expressions of social conscience such as the Margaret Bourke-White and Erskine Caldwell book You Have Seen Their Faces.

SCIENCE THEMES AND FIGURES IN A HYPERTEXT POEM: TRUE NORTH, OR, WILLARD GIBBS MEETS EMILY DICKINSON

Stephanie Strickland
Poets House, New York, NY

As she carefully hand-copies 1,775 poems onto watermarked paper in lines that sometimes circle the page, Emily Dickinson puts a + sign beside many of her words and enters alternative readings for these at the bottom of her paper. Sewing these pages together and cacheing them, as a method of publication, Dickinson invents herself in a world without room or resource for an autonomous female self. Her contemporary, Willard Gibbs, pursues an equally lonely vision, a *mathematical* physics. Their respective work is notable for its extreme compression, almost code-like on Dickinson's part and code-like indeed on the part of Gibbs, who devises phase space and the operators used by Maxwell in his electromagnetic equations.

Technology at the end of the millenium has produced an electronic place that is significantly *non-spatial*, as architect William Mitchell reminds us in *City of Bits*. This new environment both permits and requires composition across hypertextual gaps--or links. Metonymy and metaphor slide into one another, depending on whether links (gaps) are experienced as adjacencies or arcs of flight. Far in advance of present societal need, both Dickinson and Gibbs invent new rhetorics of appearance and deploy new strategies to navigate multi-dimensional space.

My hypertext poem *True North* considers their issues and achievements, focusing on the effects of these rhetorics on bodies restricted by gender, enslavement, or pregnancy. I explore a specific American context, marked by print technology, ecological threat, local history, and a number system. The Storyspace authoring software offers many new choices and raises questions of implementation and implication. How will we shape our intuitions about digitized data? Will we learn to "read" meaning in geometries of representation? Gibbs's plaster cast of water literally *shows* the content of the abstract idea of triple point, where water, ice, and steam co-exist. His cast is the ur-model for the work that rocket scientists do in creating visualizations of astronomical number sets, and even now surpasses these by providing a touchable, manipulable model. How do we come to understand the affective meaning of the numbers, number-systems, and modes of number-use which we are invoking to incarnate data?

"UPWARD BEYOND THE CONSTANT FLOW THERE WAS MOONDLING": WRITERS, RHETORIC, AND TECHNOLOGY IN THE ELECTRONIC WORLD

Marjorie C. Luesebrink
School of Humanities and Languages
Irvine Valley College

In "Tlon, Uqbar, Orbis Tertius" Borges' narrator encounters an emerging new world, fantastic in its doctrines, culture, idealism, and creation from "chaos." Among the most curious qualities of Tlon is its language--or languages, of both northern and southern hemispheres.

About the literature of the northern hemisphere, Borges tells us: "ideal objects abound, invoked or dissolved momentarily, according to poetic necessity. Sometimes, the faintest simultaneousness brings them about. There are objects made up of two sense elements, one visual, the other auditory--the color of a sunrise and the distant call of a bird."

In the Late Age of Print, the language of Tlon no longer seems like an "irresponsible work of the imagination." Borges' fabulous imagined texts, both disturbing and emancipating, seem prophetic--so strongly do they evoke the possibilities of electronic media: most particularly, media-rich hypertext.

As with Tlon, we can discover literature that anticipates the arrival of hypertextual forms. Sterne, Joyce, Pynchon, and Dos Passos experimented with fractured narrative, simultaniety, disembodied point of view, and associative flow. Katherine Hayles has delineated this in excellent analyses of Pavic's Dictionary of the Khazars and Gibson's Neuromancer.

Recently, we have been able to access narratives created for the electronic media. Between Michael Joyce's Afternoon, A Story and the interactive Web fiction, Waxweb, exist a variety of works--many with inventive narrative strategies that explore the unmapped terrain. These works suggest that the transition from a literature of print to a literature of electronic hypertext may require not only learning a new "language" but making one, as well.

Drawing on the available hypertext fictions, as well as the work of Michael Joyce, George Landow, Nancy Kaplan, Richard Lanham, Jane Yellowlees Douglas, and Katherine Hayles, this paper will explore some influences the hypertext form may have on the craft of literature. For both writer and reader, the aurora of promise in this golden morning of multimedia hyperfiction (complete with birdcall) prompts us to consider the following topics: a) Conceptual Framework and Aesthetic Rhetoric; b) The Image/Text Relationship; c) The Technical Verb in Hypertext Fiction; and d) The Time/Market Ratio.

Perhaps the wreaders of hypertext fiction are to the readers and writers of books as the literati of Tlon to the inhabitants of Borges' print world?

INDEX AND LIST OF SPECIAL EVENTS

Thursday, November 2, 6:00-7:00 PM	
Plenary Session	**Summit**
Sharon Traweek: "Crafting Cultural Studies of Science"	
Thursday, November 2, 7:00-8:30 PM	
Reception	**Bel-Air Terrace**
Friday, November 3, 7:30-8:30 PM	
Plenary Session	**California Room, UCLA Faculty Club**
Steven Pinker: "The Language Instinct"	
Friday, November 3, 8:30-10:00 PM	
Reception	**UCLA Faculty Club**
Saturday, November 4, 12:00-2:00 PM	
Luncheon and Business Meeting	**Bel-Air Terrace**
Saturday, November 4, 9:00 PM--	
Music and Dancing SLS Style	**Summit**
Sunday, November 5, 12:00-1:30 PM	
SLS Wrap-up Session: The Future of SLS	**Bel-Air Terrace**

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K. Porter Aichele: Sat 3:45 A
Amir Alexander: Fri 8:30 A
Blake Allmendinger: Sat 8:30 F
Diana B. Altegoer: Fri 8:30 C
Paul V. Anderson: Fri 8:30 A
Cynthia Appl: Sat 10:30 B
David E. Armstrong: Fri 2:45 A
Maria Assad: Sat 5:30 F(Ch); Sun 10:15 B
Tanya Augsburg: Sun 8:30 C

Anne Balsamo: Sat 10:30 A
Carolyn A. Barros: Fri 8:30 C
Nancy A. Barta-Smith: Sat 8:30 C; Sat 3:45 D(Ch)
Crystal Bartolovich: Sat 10:30 F
Charles Bazerman: Fri 8:30 B
Julian Bleecker: Sat 2:00 A
James J. Bono: Fri 4:45 F
Dain Borges: Sat 2:00 A(Ch)
Karel Boullart: Sat 5:30 C
Sylvia Bowerbank: Sun 10:15 D
John Bragin: Sun 8:30 E
David Brande: Sat 10:30 B
Linda Brigham: Fri 4:45 B
Laurel Brodsley: Fri 10:30 E
Kerry M. Brooks: Fri 2:45 D
Peter Brown: Fri 2:45 F
Beth Browning: Sun 10:15 A
Kristina Busse: Fri 10:30 A
Laurel Holliday Butcher: Fri 8:30 B
Octavia Butler: Sat 2:00 E

Joseph Carroll: Sun 10:15 B
Luke Carson: Sat 8:30 B
Steven Carter: Sun 10:15 A(Ch)
Viviane Casimir: Sun 8:30 A
David Cassuto: Fri 4:45 A
Nancy Cervetti: Fri 8:30 E
Robert Chianese: Fri 10:30 E; Sat 10:30 C(P)
F. Paul Cilliers: Sat 8:30 E
Bruce Clarke: Fri 1:00 B
Carol Colatrella: Fri 1:00 C; Sun 8:30 C(Ch)
K. C. Cole: Fri 2:45 F
Larry Coleman: Sat 2:00 F
W. John Coletta: Fri 1:00 A; Sat 10:30 C(P)
Anne Frances Collins: Fri 2:45 B
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Daniel Cordle: Sat 10:30 B
Dennis Costa: Fri 1:00 E
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David Crane: Fri 2:45 E
T. Hugh Crawford: Sun 8:30 D
William Crisman: Sun 10:15 A
Hugh Culik: Fri 2:45 B

Mark Damashek: Sat 2:00 D
Richard D. Davis: Sat 8:30 E
Helen Denham: Fri 1:00 A
Koen DePryck: Sat 5:30 C
Dawn Dietrich: Fri 10:30 A(Ch)
Richard Doyle: Fri 1:00 D
Joseph Dumit: Sat 5:30 D
Frank Durham: Sun 8:30 B(Ch)
Val Dusek: Sat 2:00 C
Michael G. Dyer: Sat 2:00 D

Joanne Eisberg: Fri 4:45 C
F. Irving Elichirigoity: Sat 3:45 F
Ellen Esrock: Fri 8:30 E

Jefferson Faye: Sun 10:15 B
Samantha Fenno: Fri 1:00 A
Randy Fertel: Fri 10:30 F
Hilene Flanzbaum: Sat 8:30 F
Jacqueline Foertsch: Sun 10:15 C
Greg Foster: Fri 2:45 C
Lawrence Frank: Fri 8:30 D; Fri 2:45 C(Ch)
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Paolo Gardinali: Fri 4:45 C
Johanna X. K. Garvey: Sun 8:30 C
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Nicholas Gessler: Sat 8:30 A(Ch); Sat 2:00 D
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Elizabeth Green: Fri 10:30 C
Mark Greenberg: Fri 4:45 F
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Marcella Greening: Fri 8:30 E(Ch); Sun 8:30 B(P)
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Richard Grusin: Sun 8:30 D(Ch)
Cynthia Guidici: Sun 10:15 A

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Paula Haines: Sat 2:00 C
Paul Harris: Fri 10:30 D; Fri 1:00 D(Ch)
F. Elizabeth Hart: Sat 5:30 A; Sun 10:15 B(Ch)
Stephen Hartnett: Fri 2:45 B; Sat 8:30 B(Ch)
Donald M. Hassler: Fri 8:30 D
Amelie Hastie: Fri 2:45 E
John G. Hatch: Fri 1:00 B
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Julie C. Hayes: Fri 10:30 F; Sat 8:30 E(Ch)
N. Katherine Hayles: Fri 4:45 F; Sat 10:30 E; Sat 3:45 E(Ch)
Deborah Heath: Fri 10:30 E(Ch)
Barbara A. Heifferon: Sat 2:00 C(Ch); Sun 10:15 C
Stefan Helmreich: Sat 10:30 E

Cyndy Hendershot: Fri 2:45 C
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Thomas J. High: Sun 8:30 B(P)
Sarah Higley: Sun 8:30 A
Vranna Hinck: Sat 5:30 F
Douglas Hollinger: Sun 10:15 D
Kathryn Montgomery Hunter: Sun 8:30 B(P)

Sally Jacoby: Sat 3:45 E
Alice Jenkins: Sat 5:30 F
John Johnston: Fri 4:45 B
James W. Jones: Fri 1:00 C

Subhash C. Kak: Fri 4:45 E
Marianthe Karanikas: Fri 8:30 A
Thomas P. Kealy: Sun 10:15 D
Eve Keller: Sat 3:45 B
Michelle Kendrick: Fri 10:30 E
Martin Kevorkian: Fri 8:30 D
Alvin C. Kibel: Sat 8:30 B
Terrance King: Sat 10:30 B
Kenneth Knoespel: Sat 3:45 E
Ramunas Kondratas: Sat 5:30 D
Leonard Koos: Fri 10:30 A; Fri 4:45 D(Ch)
Jennifer Swift Kramer: Sat 8:30 D(Ch); Sat 3:45 C
Philip Kuberski: Fri 10:30 D

Jay A. Labinger: Sat 2:00 B
Kevin LaGrandeur: Sun 8:30 A
Linda Layne: Sun 8:30 B(P)
James Leigh: Fri 10:30 F
Timothy Lenoir: Sat 10:30 E
Sydney Levy: Fri 10:30 D
Philip Lewin: Sun 8:30 D
Frances D. Louis: Fri 4:45 E; Sat 2:00 E(Ch)
Deborah Lovely: Fri 1:00 C
Marjorie Luesebrink: Sun 10:15 F

Carl Maida: Sat 10:30 C(P)
William Major: Fri 4:45 A
Timothy R. Manning: Sat 10:30 A
Robert Markley: Sat 10:30 A
Thomas Martin: Sun 8:30 E
Donna McBride: Sun 10:15 A
Henry McDonald: Sat 5:30 B
Marilyn Chandler McEntyre: Fri 2:45 D
Donald J. McGraw: Fri 4:45 E
Andrew McMurry: Fri 4:45 A
Rebecca Merrens: Fri 8:30 E
Michael Merrill: Sat 2:00 A
Shoshana Milgram: Sat 5:30 E(P)
Wayne Miller: Fri 4:45 C
Sara L. Miskevich: Fri 2:45 A
W. J. T. Mitchell: Sat 2:00 A
Torin Monahan: Sat 8:30 E

Goldie Morgentaler: Fri 8:30 D
Ned Muhovich: Sun 8:30 D
Timothy Murphy: Sat 5:30 B
Jamil M. Mustafa: Sun 10:15 C

Richard Nash: Sat 3:45 B
Kate Nickel: Sat 8:30 D
Bob Nideffer: Fri 4:45 C(Ch)
Brian Noble: Sun 8:30 D
Yvonne Noble: Fri 4:45 D

Jaishree Odin: Sat 8:30 C
Stephen Ogden: Fri 4:45 E(Ch); Sat 10:30 D
Patrick O'Kelley: Sat 3:45 F
Stanley Orr: Sun 10:15 E
Laura Otis: Sat 8:30 D; Sun 10:15 D(Ch)

Lucia Palmer: Fri 1:00 A(Ch); Sat 3:45 F
Miranda Paton: Sat 2:00 A
Francine Patterson: Sat 8:30 A
Sidney Perkowitz: Fri 2:45 F
Roger Persell: Sat 5:30 E(P); Sun 8:30 C
Stuart Peterfreund: Fri 1:00 E; Sat 10:30 B(Ch)
Steven Pinker: Fri 7:30 (plenary)
Mary Ellen Pitts: Sat 2:00 F
Paul Plouffe: Sat 5:30 B(Ch)
Livia Polanyi: Fri 8:30 C
Lily Porten: Fri 10:30 A
David Porush: Sat 5:30 A; Sun 10:15 F(Ch)
Stephen Potts: Sat 2:00 B(Ch); Sat 5:30 B
Dale J. Pratt: Fri 1:00 E; Sun 8:30 E(Ch)
Seymour W. & Phyllis L. Pustilnik: Fri 10:30 E

Alan E. Rapp: Fri 1:00 D
Alan Rauch: Fri 2:45 C
Beth Rayfield: Sun 10:15 E
Julie A. Reahard: Fri 8:30 A
Barbara J. Reeves: Sat 3:45 A
Carol Reeves: Fri 1:00 C
Roddey Reid: Fri 4:45 A
Teri Reynolds: Sat 10:30 D
Martin Rosenberg: Fri 1:00 B; Fri 2:45 B(Ch)
Brian Rotman: Fri 10:30 D; Sat 10:30 E(Ch); Sat 3:45 E(Ch)
Andrew Russ: Sat 10:30 D
Anka Ryall: Fri 10:30 C

Linda Saladin: Sun 8:30 C
Philips Salman: Sat 10:30 D(Ch); Sat 5:30 A
Raphael Sassower: Sun 8:30 E
James R. Saucerman: Sat 2:00 B
Barry Saunders: Sat 5:30 D
Lance Schachterle: Fri 4:45 F; Sat 2:00 B
Elmar Schenkel: Fri 4:45 E
Ronald Schleifer: Sat 3:45 D
Mark Schlenz: Sat 3:45 C
Phoebe Sengers: Sat 3:45 D
Patrick B. Sharp: Fri 8:30 B

Geoffrey Sharpless: Sat 8:30 F
Ross Shideler: Sat 8:30 F
Yvan Silva: Sat 3:45 C(Ch); Sun 8:30 E
Debra Silverman: Sat 3:45 B
Christine Skolnik: Fri 2:45 D: Sat 10:30 C(P)
Johanna M. Smith: Fri 8:30 C
Vivian Sobchak: Fri 1:00 D
Scott Sprenger: Sat 3:45 F
Susan Squier: Fri 10:30 A
Barbara M. Stafford: Sat 3:45 E
Carl G. Stahmer: Fri 10:30 B
Sarah Stein: Sat 8:30 C
Lee Sterrenburg: Fri 10:30 C
Robert E. Stillman: Sun 10:15 D
Stephanie Strickland: Sun 10:15 F
Richard Strohman: Fri 8:30 F
Jeffrey Sturges: Fri 2:45 F
Laura L. Sullivan: Sat 10:30 A(Ch)
Clive Sutton: Sat 2:00 F

Joseph Tabbi: Fri 4:45 B
Joanne E. Tanner: Sat 8:30 A
Allen Thiher: Sat 3:45 A
Sharon Traweek: Thu 6:00 (plenary)

Karyn Valerius: Sat 2:00 C
Elliott Visconsi: Sat 10:30 D
Karl F. Volkmar: Fri 2:45 B

Lori Wagner: Fri 8:30 D(Ch)
Angela Wall: Fri 2:45 E
Richard Wallach: Sat 8:30 B
Laura Dassow Walls: Sat 10:30 C(P); Sat 3:45 C
Ilse Wambacq: Sat 5:30 C
Alan G. Wasserstein: Fri 8:30 F
Stephen J. Weininger: Fri 10:30 D(Ch); Fri 1:00 B; Fri 4:45 F
John Wells: Fri 8:30 F
Eric White: Sat 2:00 B
Gary Willingham-McLain: Fri 2:45 C
Vince Willoughby: Fri 10:30 B
Elizabeth Wilson: Sat 3:45 D
Philip K. Wilson: Sat 5:30 F; Sun 10:15 C(Ch)
Teresa Winterhalter: Fri 8:30 E
Geoffrey Winthrop-Young: Fri 4:45 B
Michael Witmore: Fri 1:00 A
Kathleen Woodward: Fri 2:45 E
Michael Wutz: Fri 4:45 B

Jeffrey V. Yule: Sat 3:45 C
Emily Zants: Fri 10:30 F